

APR 20 1906

AMERICAN BEE JOURNAL

46th Year

CHICAGO, ILL., APRIL 5, 1906

No. 14

In the Spring-Time

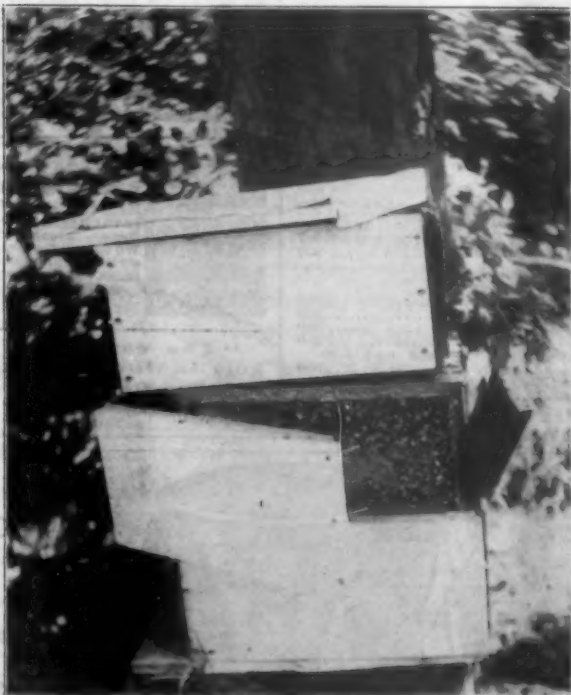
Apple blossoms in the orchard,
Singing birds in every tree;
Grass a-growing in the meadows
Just as green as green can be.

Violets in shady places,
Sweetest flowers were ever seen!
Hosts of starry dandelions,
"Drops of gold among the green."



BEE-HIVE STRUCK BY LIGHTNING.
(See page 292)

AN ARMFUL OF BEES.—(See page 292)



Pale arbutus, fairy wind-flowers,
Innocents in smiling flocks;
Coolest ferns within the hollows,
Columbines among the rocks.

Dripping streams, delicious mosses,
Tassels on the maple trees;
Drowsy insects, humming, humming—
Golden butterflies and bees.

Daffodils in garden borders,
Fiery tulips dashed with dew;
Crocus flowers; and through the greenness,
Snowdrops looking out at you.

—Selected.



PUBLISHED WEEKLY BY
GEORGE W. YORK & COMPANY
334 Dearborn Street, Chicago, Ill.

IMPORTANT NOTICES.

THE SUBSCRIPTION PRICE of this Journal is \$1.00 a year, in the United States, Canada, and Mexico; all other countries in the Postal Union, 50 cents a year extra for postage. Sample copy free.

THE WRAPPER-LABEL DATE indicates the end of the month to which your subscription is paid. For instance, "dec 6" on your label shows that it is paid to the end of December, 1906.

SUBSCRIPTION RECEIPTS.—We do not send a receipt for money sent us to pay subscription, but change the date on your wrapper-label, which shows that the money has been received and credited.

Advertising Rate, per Agate Line, 10¢.

14 lines make one inch.
Nothing less than 1/4 inch accepted.

Time Discounts.	Space Discounts.
4 times.... 5 per cent	100 lines... 5 per cent
13 ".... 10 "	500 ".... 10 "
26 ".... 20 "	1000 ".... 20 "
52 ".... 30 "	2000 ".... 30 "

These rates are subject to either time or space discounts, at choice, but not both.
Reading Notices, 25 cents, count line, subject to the above discounts.
Goes to press Monday morning.

National Bee-Keepers' Association

Objects of the Association.

- 1st.—To promote the interests of its members.
- 2d.—To protect and defend its members in their lawful rights.
- 3d.—To enforce laws against the adulteration of honey.

Annual Membership Dues, \$1.00.

General Manager and Treasurer—
N. E. FRANCE, Platteville, Wis.

If more convenient, Dues may be sent to the publishers of the American Bee Journal.

The Emerson Binder.

This Emerson stiff-board Binder with cloth back for the American Bee Journal we mail for but 75 cents; or we will send it with the Bee Journal for one year—both for only \$1.50. It is a fine thing to preserve the copies of the Journal as fast as they are received. If you have this "Emerson" no further binding is necessary.

GEORGE W. YORK & CO.,
334 Dearborn Street, CHICAGO, ILL.

Contents of this Number

Illustrations—

- An Armful of Bees..... 1st Page
Bee-Hive Struck by Lightning..... 1st Page
Frame-spacing Arrangement..... 298

Editorial Notes and Comments—

- Honey Advertising and the National Association..... 291
How to Provide Water for Bees..... 291
Need of Water for Bees..... 291

Miscellaneous News Items—

- An Armful of Bees..... 292
Bee-Hive Struck by Lightning..... 292
National Convention..... 292

Contributed Special Articles—

- Baby Nuclei..... 297
Bee-wax—Origin, Composition, Adulteration Tests, Etc..... 296
Beginning Bee-Keeping—Good Advice..... 296
Cleaning Oil-Cans..... 297
Dadant Methods of Honey-Production (No. 8)..... 298
Family Apids..... 294
Feeding Bees..... 297
Hive Colors, Etc..... 298
Hives and Frame-Spacers..... 298
Home-Made Hives..... 299
Honey that Tickles Palates..... 298
Plea for a Better General Education..... 294
Reading Bee-Literature..... 297
Shipping and Selling Section Honey..... 294

Convention Proceedings—

- A Non-Swarming Hive..... 302
Bee-Keeping—Ancient and Modern..... 301
Dysentery Among Bees..... 305
Economy in Bee-Keeping..... 299
Feeding Back to Get Partly-Filled Sections Completed at Close of Honey Season..... 303
Foul-Brood Inspection..... 304
Harvesting of Extracted Honey..... 304
Management of Out-Apries..... 302
Michigan State Convention..... 302
Performing Bee-Men at Fair..... 303
Pollens in Sections..... 303
Queen-Excluders..... 308
Races of Bees..... 304
Size of Sections..... 304
Uncapping Machine..... 304
Wisconsin State Convention..... 9

Southern Beedom—

- Attend Bee-Keepers' Conventions..... 305
Invitation to the National..... 305
Naeces Valley Convention..... 305

Our Sister Bee-Keepers—

- New England Sister Looks On..... 306
Some Intemperate Bees..... 306
Very Old (?) English Bees..... 306

Mr. Hasty's Afterthoughts—

- Bees Moving Eggs or Larvæ..... 307
Caucasian Bees..... 307
Causes of Honey Flow and Suppression..... 307
Cutting Foundation..... 306
Dampening Sections..... 306
Growing a Quick Wind-Break..... 306
Sulphur for Bee-Paralysis..... 307
Two Queens in a Hive..... 307

Canadian Beedom—

- How to "Sample" a Town With Honey..... 307
Losing its Honey Flavor..... 307
Relation of Ripeness of Honey to Granulation..... 307
Streaky Granulation in Honey..... 307

Dr. Miller's Question-Box—

- An Injured Finger..... 304
Buying Bees in the Spring..... 309
Changing Queens..... 309
Equalizing Brood Among Colonies..... 309
Extracted-Honey Retail Packages and for Storage..... 304
Italianizing Black Bees..... 308
Keeping Queens..... 309
Making Sections at Home..... 309

- Mice as Honey-Eaters..... 308
Miller Frame..... 309
Number of Comb-Honey Supers Per Colony..... 309
Old Combs for Beeswax..... 309
Preventing Bees Hanging Out..... 309
Pure-Blood Italians..... 298
Rearing Queens..... 308
Ripening Basswood Honey..... 308
Several Eggs in a Cell..... 309
Shallow Hives..... 309
Stretching Comb Foundation..... 308
Uniting Weak Colonies..... 308
Ventilation Space Below Brood-Frames When Moving Bees..... 309
Wax-Worms and Combs..... 308

Reports and Experiences—

- Bees Wintered Well So Far..... 310
Honey Scarce Last Season..... 310
Keeping Bees on Shares..... 310
Not Expecting a Great Crop..... 310
Season Earlier Than Usual..... 310
White Clover All Right..... 310

Langstroth on the *** Honey-Bee

Revised by Dadant—Latest Edition.

This is one of the standard books on bee-culture, and ought to be in the library of every bee-keeper. It is bound substantially in cloth, and contains over 500 pages, being revised by those large, practical bee-keepers, so well-known to all the readers of the American Bee Journal—Chas. Dadant & Son. Each subject is clearly and thoroly explained, so that by following the instructions of this book one cannot fail to be wonderfully helped on the way to success with bees.

The book we mail for \$1.20, or club it with the American Bee Journal for one year—both for \$2.00; or, we will mail it as a premium for sending us THREE NEW subscribers to the Bee Journal for one year, with \$3.00.

This is a splendid chance to get a grand bee-book for a very little money or work.

GEORGE W. YORK & CO.
334 Dearborn Street, CHICAGO, ILL.

FENCE Strongest Made

Made of High Carbon coiled wire. We have no agents. Sell direct to user at factory prices on 30 days free trial. We pay all freight. Catalog shows 37 styles and heights of farm and poultry fence. It's free. Buy direct. Write today.

COILED SPRING FENCE CO.
Box 90 WINCHESTER, INDIANA.

"The continuous advertiser gets the bulk of the business, because others are not advertising, and he is."

NOT IN THE TRUST



For High-Grade Cans

Prices Always the Lowest

Write for Prices, Stating Quantity Wanted

Friction Top Cans for Honey and Syrup

Prompt shipment and careful attention given to all orders. Special prices to members of the Bee-Keepers' Associations.

Mention Bee Journal when writing.

Made by **CANNERS CAN CO., 1035 W. 47th Street, CHICAGO, ILL.**

"DADANT'S FOUNDATION"

IT EXCELS

EVERY INCH equal to sample

Beauty, Purity, Firmness.

No Sagging, No Loss.

Twenty-seven Years of Experience.

We Guarantee Satisfaction.

WAX WORKED INTO FOUNDATION

BEE-SUPPLIES of all kinds.

Beeswax Wanted at all times...



DADANT & SONS, Hamilton, Ill.

SEND FOR OUR CATALOG

If you want the Bee-Book

That covers the whole Apicultural Field more completely than any other published, send \$1.20 to

Prof. A. J. Cook, Claremont, Cal.,

FOR HIS

"Bee-Keeper's Guide."

Liberal Discounts to the Trade.

CAUCASIAN QUEENS!

Caucasian Bees are very gentle. They are easy to handle and are, therefore, suited to beginners, timid bee-keepers and to those who keep bees in town. If you want to try this race, or if you want to improve the stock of your Italian Bees, write to

ROBERT B. McCAIN,

2Atf YORKVILLE, ILL. R. F. D.

DON'T WAIT for the season to start before you order your **Bee-Supplies**

DITTMER'S FOUNDATION

IS THE BEST MADE

We make a specialty of working wax for Cash.

Retail—Wholesale—Jobbing

BEESWAX ALWAYS WANTED

Write for our Price-List and samples; we would like to send them to you at our expense.

GUS DITTMER, Augusta, Wis.

Mention Bee Journal when writing.



Wisconsin Basswood Sections

And Prompt Shipments

Is what we are making for our customers.

DOVETAILED HIVES AND SHIPPING-CASES

We carry a full line of SUPPLIES. Ask for Catalog.

THE MARSHFIELD MANUFACTURING CO., Marshfield, Wis.

Mention Bee Journal when writing.

All About California

The Pacific Rural Press has been a household word throughout California for 35 years. It is authority on all matters regarding the soil or products of California. Weekly, illustrated: Edited by practical specialists. Two Dollars per year. Send for sample copy.

Pacific Rural Press,

830 Market Street, SAN FRANCISCO, CALIF.
50Atf Please mention the Bee Journal.

65c for 12 Names For names and P. O. of 12 farmers and 15c—stamps taken—we will send for 2 yrs. the Farmer's Call—reg. sub. price 40c a year. F. C. is a weekly, 25 years old, 1,300 pages a year. Sample free.

FARMER'S CALL, Quincy, Ill.

Mention Bee Journal when writing.

Root's Bee-Supplies

You know what this means. Four carloads of New Goods on hand. Our business increased last year 100 percent over 1904. This is a proof that we are saving our customers money. Try us. Low Freight Rates from Toledo. Large Discounts—that tells the story. Our 80-page Catalog is sent free.

GRIGGS BROS.

521 Monroe Street, TOLEDO, OHIO.

Please mention Bee Journal when writing advertisers.

★ PRICES ★

and Quality are the things that sell goods. We are in the heart of the lumber country where we get lumber at first hands without freight. We have the cheapest known water-power. We make goods that are the equal of any in quality and workmanship. In some instances they are superior. Our SECTIONS are made from tough wood that will bend without breaking, even if you don't wet them. How many Sections did you break in putting together the last thousand? Think of it.

Send for our Catalog and get prices that will surprise and please you. All we ask is a trial order, and there will be no trouble in holding your custom.

Minnesota Bee-Supply Co.,

JOHN DOLL & SON, PROPRIETORS

Nic Island No. 33.

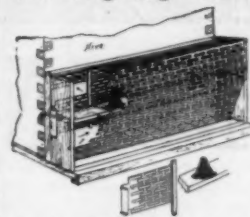
MINNEAPOLIS, MINN.

ROOT'S GOODS AT FACTORY PRICES
Finest and largest stock of Supplies in Illinois.
Italian Bees and Queens in season. Catalog free.
15 eggs of Pure Barred Plymouth Rocks, \$1.00.
Incubators and Brooders always on hand.
12A13t H. S. DUBY, St. Anne, Ill.

Please mention Bee Journal
when writing advertisers.

SIMPLEX BEE-HIVE—New Principle
Plain. Perfect. Tested. Adapted to every climate. Obviates spring-dwindling and bee-moths. Guarantees 3 times greater increase of brood and honey; is 50 percent cheaper than Langstroth hive. Patented. Partnership or royalty agreement with manufacturers desired.
CARL LUDLOFF
13A2t 202 TEXAS ST., EL PASO, TEXAS.

The Easy Way to Manage Swarming



Use the
NEW DIBBERN
Queen-Trap

No Climbing.
No Absconding
Order to-day.

Prices, by mail, 75c
5 or more
(freight) each, 40c

G. H. Dibbern & Son, Milan, Ill.

13A4t

Please mention the Bee Journal.

WANTED MEN TO LEARN BEE-KEEPING

We can take live young men who really want to become expert bee-keepers, give them employment in our apiaries, and teach them as much as they can learn in one season. In applying state age, height, weight, and previous occupation. None but those of good moral habits need apply. **MORLEY PETTIT,**
13A4t VILLA NOVA, ONTARIO, CANADA.

Mention Bee Journal when writing.

WHEN YOU NEED QUEENS

And want your order filled by return mail with the best Queens that money can buy, we can serve you. Queens are healthy and prolific; bees the best of workers. Try our fine strain of 3-band Italians. Tested, \$1.00 each. Untested, 75c; \$8.00 per dozen.

J. W. K. SHAW & CO.

13A2t LOREAUVILLE, Iberia Par., LA.

Mention Bee Journal when writing.



An Italian Queen Free

In May or June, 1906,

To Regular Paid-in-Advance Subscribers Only.

We wish to make a liberal offer to those of our regular readers whose subscriptions are paid in advance. It is this: We will send you FREE by mail, in May or June, 1906, an Untested Italian Queen for sending us \$1.00 and the name and address of a NEW subscriber to the American Bee Journal for a year. Or, to yourself, a Queen and Bee Journal a year—both for \$1.50.

We are booking Queen orders for next May and June delivery. Will you have one or more? These offers ought to bring in many orders. Our Queens are reared by the best queen-breeders, and give satisfaction.

Address,

GEORGE W. YORK & CO. 334 Dearborn St., Chicago, Ill.



"If Goods are wanted Quick, send to Poudar"



BEE-SUPPLIES

Root's Goods at Root's Prices

Everything used by Bee-Keepers.
POUDAR'S HONEY-JARS. Prompt Service.
Low Freight Rates. Catalog Free.

BEESWAX WANTED

I pay highest market price for beeswax, delivered here, at any time, cash or trade. Make small shipments by express; large shipments by freight, always being sure to attach your name to the package. My large illustrated catalog is free. I shall be glad to send it to you.

WALTER S. POUDAR,
513-515 Massachusetts Ave., INDIANAPOLIS, IND.

Mention Bee Journal when writing.



BEE-KEEPERS' —AND— POULTRY SUPPLIES

LEWIS' BEEWARE

is so well known it needs no introduction. 2 percent
Discount on Bee-Supplies for March.

Beeswax wanted—28c cash, 30c when taking bee-supplies in exchange.
Extracted Honey For Sale. Prices on application. Sample, 10 cents.

Cornell Incubators, Peep O' Day Brooders and Cornell Chick Machinery ARE UNEXCELLED

The 1906 Cornell Incubator is superior to anything heretofore put on the market.

New 1906 Catalog for either line Free.

If you want orders filled PROMPTLY
AT FACTORY PRICES, send your order to

YORK HONEY AND BEE CO. (Net Inc.)

H. M. ARND, MGR.

141 Ontario Street, - CHICAGO, ILL.

Long Distance Phone, North 1559.

ITALIAN BEES in modern hives for sale, f.o.b. Chicago.



BEE-SUPPLIES

Everything the bee-keeper needs. Distributing house for Lewis' Goods at Factory Prices. Now is the time to buy for next season.

Discount for Early Orders

FINE EXTRACTED HONEY in cans or barrels. The best the world can produce. Samples 8 cents, to pay postage and packing. How much can you use? Prices quoted quick on the quantity you mention.

We buy BEESWAX at all times in the year. Send for our Catalog and "Special"—free.

C. M. SCOTT & CO. 1004 EAST WASH. STREET
INDIANAPOLIS, IND. ***

"In every country the successful advertiser is the continuous advertiser."



The Head

of the family is the money-getter. If our Queens head your colonies they will give you more money. The largest queen-rearing apiary in the North. The gentlest and best Italian and Caucasian. Prices for a postal. BEE-SUPPLIES.

The Wood Bee-Hive Company
LANSING, MICH.

Mention Bee Journal when writing.

QUEENS

Best 3-band Italian—1 Untested Queen, 75c; 6 for \$4; 12 for \$7.25. One 2-frame Nucleus with Queen, \$2.25; 10 in one bunch, \$17.50.

LUTHER PRESSWOOD,

6E7t RELIANCE, TENN.

Mention Bee Journal when writing.

FOR SALE 100 colonies of Pure Italian BEES in 8 or 10 frame New Dov. Hives with Hoffman Frames; Tested Queen in each colony. Price, \$6 each. In lots of 10—\$5 each.

F. A. GRAY, Redwood Falls, Minn.

13A3t Please mention the Bee Journal.

The Rietsche Press

Made of artificial stone. Practically indestructible, and giving entirely satisfactory results. Comb foundation made easily and quickly at less than half the cost of buying from the dealers. Price of Press, \$1.50—cash with order. Address,

ADRIAN GETAZ,

45Atf KNOXVILLE, TENN.

J. G. Goodner, of this State, writes me that he "prefers to pay \$25.00 for a Rietsche Press rather than do without it."—A. G.

Mention Bee Journal when writing.

Passengers east from Buffalo to Fort Wayne, Findlay, Fostoria, Cleveland, Erie, Buffalo, New York City, Boston, and all points east, will consult their interests and find advantage in selecting the Nickel Plate Road east from Chicago. Three through trains are run daily, with through day coaches to New York City, and modern Pullman sleeping-cars to destination. Rates always the lowest, and no excess fares are charged on any train, for any part of the journey. Modern dining-car service, with individual club meals, ranging in price from 35 cents to one dollar; also meals a la carte. Ask for tickets via the Nickel Plate Road. Chicago depot, La Salle and Van Buren Sts., the only station in Chicago on the Elevated Loop. Chicago City Ticket Office, 111 Adams St. Detailed information may be secured by addressing John Y. Calahan, General Agent, 113 Adams St., room 298, Chicago.

1-12A6t

12.80 For 200 Eggs INCUBATOR

Perfect in construction and action. Hatches every fertile egg. Write for catalog to-day.

GEO. H. STAHL, Quincy, Ill.



65c for 12 Names For names and P.O. of 12 farmers and 10c stamps taken—we will send for 2 yrs. the Farmer's Call—reg. sub. price 40c a year. F. C. is a wkly., 25 years old, 1,500 pages a year. Sample free. FARMER'S CALL, Quincy, Ill.

PERFECTION IN SECTIONS

Inspector's Certificate

The contents of this crate were inspected by Sorter No. **175**

Packed by **155**

Date **March 21, 1906**

If you find any occasion for criticism, in the way of defective material or inaccurate workmanship, return this slip, with a sample of the work complained of, to the manufacturer,

THE A. I. ROOT CO., Medina, Ohio.

A Guarantee of Workmanship

We have spent thousands of dollars in building and improving our Section Machinery. Our equipment is the best that brains can produce. We use only the best basswood lumber that can be obtained. Now to insure the third feature in the trinity of perfection—**inspection**.

The human quality is harder to regulate than either machinery or material. How can the correct grading of our sections be insured? We have a system that solves the question. In every crate of Root sections made in 1906 you will find an inspection card like the one illustrated above. The Sorter, when he finishes his work, stamps his number on this card—likewise the Packer. In case of careless grading or packing the matter can be traced to its source. The Sorter and Packer are anxious to keep their positions and ambitious for better wages. Naturally the best possible work is done by each.

Root's Sections for 1906 are better than ever. Last season we made 23,000,000. This season we will doubtless exceed that mark.

Prices of Sections

	No. 1.	No. 2.		No. 1.	No. 2.
Per 100	\$.75	\$.65	Per 2000	\$9.75	\$8.75
Per 250	1.50	1.25	Per 3000	14.25	12.75
Per 500	2.50	2.25	Per 4000	18.50	16.50
Per 1000	5.00	4.50	Per 5000	22.50	20.00

Plain, no-beeway sections, $4\frac{1}{4} \times 4\frac{1}{4} \times 1\frac{1}{8}$, $1\frac{1}{8}$, or $1\frac{3}{8}$; $3\frac{3}{8} \times 5 \times 1\frac{1}{8}$, $4 \times 5 \times 1\frac{1}{8}$ or $1\frac{1}{8}$, in lots of 1000 or more will be 25 cents per 1000 less than prices named above.

Catalog on application.

THE A. I. ROOT COMPANY

MEDINA, OHIO

Branch Offices in the United States

The A. I. Root Co., 44 Vesey St., New York City.
The A. I. Root Co., 10 Vine St., Philadelphia, Pa.
The A. I. Root Co., 1635 Genesee St., Syracuse, N. Y.
The A. I. Root Co., Mechanic Falls, Maine.

The A. I. Root Co., 1100 Maryland Avenue, S. W.,
Washington, D. C.
The A. I. Root Co., 144 E. Erie St., Chicago, Ill.
The A. I. Root Co., 1024 Mississippi St., St. Paul, Minn.

AMERICAN BEE JOURNAL.

ESTABLISHED IN 1861 OLDEST BEE-PAPER IN AMERICA

DEVOTED EXCLUSIVELY TO THE INTERESTS OF HONEY-PRODUCERS

(Entered at the Post-Office at Chicago as Second-Class Mail-Matter.)

Published Weekly at \$1.00 a Year, by George W. York & Co., 334 Dearborn St.

GEORGE W. YORK, Editor

CHICAGO, ILL., APRIL 5, 1906

Vol. XLVI—No. 14



Editorial Notes and Comments

The Need of Water for Bees

The bee-keeper looks out that his bees are supplied with food, giving little thought generally to their need of water; but if the bees themselves were consulted they would be likely to say that in the spring they are more concerned about drink than food. If they are in the care of a provident owner, enough food is in the hive so that there is no need to go outside for it unless the weather is entirely favorable; but when brood-rearing is begun water is in constant demand, and no supply has been stored up from the previous fall, hence many is the day when they are forced out to skirmish for water when the weather is so inclement that thousands of the wee creatures never reach home with their icy burdens. How many bee-keepers, probably, are there who pay the slightest attention to the matter of providing their bees with water? Humanity alone should urge that which will pay in dollars and cents.

How to Provide Water for Bees

In some cases it will be an advantage to the bees if water is provided for them in any way whatever, only so it is near enough to prevent their going off a half mile or more for it. Still more important than to save such travel is to furnish them water in a sheltered place. For a bee will chill much more quickly sitting still in a chilly place loading up with water than while in active exercise on the wing. So let their watering-place be sheltered, protected from cold winds and open toward the sun.

A bee will be three times as long loading up with cold water as with warm. So there will be a gain to give tolerably hot water as early in the day as bees begin to fly; and the oftener it is renewed the better. If you are willing to take the trouble, you may arrange so that the water shall be kept throughout the day at a uniform degree of warmth. Take a box 2 or 3 inches higher than a lamp to be set in it. Over this set a tin pan large enough to cover the box. Put in the pan some cork chips to prevent the bees from drowning, and fill up with water. The cork chips can be got at any grocery which sells Southern grapes. Lacking cork chips, a floating board well filled with holes, or some other means, may be used to prevent drowning. A lamp is set in the center of the box, and kept turned up enough to keep the water at blood heat or warmer. For ventilation make a half-inch hole at the bottom of the box at one side, and a similar hole at the top on the opposite side. Make a door on one side through which to regulate the lamp.

Some sort of roof or covering should protect rain during showers. When rain is falling one would think the bees should take the drops falling at the entrance of the hive;

but they don't, they fly through the rain to their usual watering-place.

Some trouble to do all this; but if you will find the places where bees, left to themselves, obtain their supply of water in spring from icy streams or puddles, and count the dead bees that have been lost thereby, you may think the plan suggested none too much trouble. Of course, those who live far enough South may thank their stars that they are saved all anxious thought on this score.

Honey Advertising and the National Association

We have received the following contribution from Hon. Eugene Secor, of Forest City, Iowa, who was at one time General Manager of the National Bee-Keepers' Association:

A BUREAU OF PUBLICITY.

EDITOR AMERICAN BEE JOURNAL:—You may remember the friendly correspondence we had after the Honey-Producers' League was organized.

You will recall that I was not very enthusiastic as to the beneficial results sought to be obtained through the means proposed.

Without looking up the old files of the American Bee Journal to see just what the purposes of the League were, it was, and is, my impression that it was proposed to advertise honey in the leading papers and magazines, asserting its purity, its healthfulness, etc.

If the impression then received was wrong it was chiefly due, perhaps, to the fact that the sum of \$5000 was called for before beginning business. It occurred to me that if \$5000 were needed to maintain a few small advertisements in a few of the leading literary and political journals for the first year, it would require other equally large sums every year to keep alive the interest awakened if any impressions on the public were produced.

So I say this plan did not appeal to me, because I thought the bee-keepers, or the manufacturers even, could not afford the expense.

If, however, I was mistaken in my ideas of the League's purposed work, and if it (the League) meant to maintain a "Bureau of Publicity," working through the reading columns of such newspapers as could be interested, then I am heartily in favor of the plan.

If the League could be merged into the National Association, and the latter take up this work of publicity in addition to its other duties, it would open a wide field of usefulness.

I suggest the formation of a Literary Bureau by the National Directory. This Bureau, composed of two or three competent members, could prepare matter for the secular press pertaining to bees, honey, comb foundation, etc., which would not only be admitted to the reading columns of hundreds of papers, but would be welcomed and sought after.

I believe that publishers, as a rule, want correct information on all technical subjects, and their greatest trouble is to find some one who is competent to furnish it.

The "ready print" companies that furnish plates or "insides" for most of the country weeklies, sometimes pay specialists under contract by the year to prepare matter for them.

It seems to me that it would not be difficult to get access to the columns of these country weeklies through the Newspaper Unions. Other papers might be interested if the proper methods were pursued.

I think I could name at least two men who are wise enough, and capable enough, to bring about such publicity. The present Secretary of the National and the General Manager of the League know how to gain admission to the editorial rooms of the press.

I wish to state here that I am aware of some of the labors performed by you, Mr. York, along the lines above suggested. I know that you have been admitted to the columns of some of the Chicago dailies in the interest of apicultural truth. This is an assurance that more might be done by the same efficient means if it were thought wise to keep it up.

I believe some discussion was indulged in at the last meeting of

the National relative to uniting the two societies, but I am not sure what action was authorized. It seems to me that duplication of work that could be accomplished by one association is not wise. I see no reason why the National could not take up this work of publicity under its present constitution, and if prosecuted as before suggested, the expense would not be greater than the present receipts warrant.

A small committee, untrammelled by red tape, could do a lot of advertising in the course of a year with small outlay.

Perhaps this subject isn't timely. It may be ill-advised, but knowing what other organizations are attempting in their own interests, and how they are going about it, leads me to suggest the method briefly alluded to above.

EUGENE SECOR.

We are glad Mr. Secor has written the foregoing. It gives us the opportunity to say that in addition to advertising honey extensively in the newspaper and magazine press direct, it was The Honey-Producers' League's intention to do much along the lines mentioned by Mr. Secor. Naturally, when the advertising columns of a publication were being patronized, their managers would more readily accept contributions along the same line, but of a more general character, and which often would contain appropriate apiarian illustrations.

The proposition made by the League at the late National convention (subject later to the approval of the League's membership), was that the funds now in the League's treasury be turned over to the National, to be expended in the same manner as proposed by the League's constitution. Up to this time the League has not been notified of the action of the National's Board of Directors on the proposition, although it has been over three months since it was made.

Mr. Secor's suggestion is all right, being in line with what we proposed for the National some time ago. But perhaps now that it comes from Mr. Secor it will be considered. We hope so, at least.

We may say further, that if it is expected to "get something for nothing" along the advertising line, bee-keepers might as well stop before starting. What is \$5000 or \$20,000 a year among say 100,000 bee-keepers? Why, many single concerns think nothing of spending such sums every year, and they are not the largest firms, either. Bee-keepers must get over the idea of doing a penny advertising business if they wish to develop a more general demand for honey. It can't be done with a few free reading notices in papers of small circulation, and with several hundred dollars.

But if the National had the League's funds in addition to its own, an effort could be made that might result in creating enough interest to induce more bee-keepers to contribute to the advertising fund.



Miscellaneous News & Items

Well, How Do You Like It?—We mean this 32-page number of the American Bee Journal. Why not show it to your bee-keeping neighbors and request them to subscribe for a year? We offer many fine premiums in this issue for the work of getting and sending in new subscriptions. Judging from the way in which new readers are being added to our list every week, it must be a real pleasure to a non-subscriber to be asked to take the American Bee Journal. Try it and see.

We feel very grateful to those who are helping to increase our list of regular readers. If you have not secured any new subscribers lately, who not go out and ask a few bee-keepers to let you send in their dollars? If you have been sending in new subscriptions lately, "do it some more." We have room for a lot more of them!

The National Convention.—In these strenuous times there is not always the consideration there might be for those who do not act with lightning speed; as instance the following:

MR. EDITOR:—Why don't you announce the time and place of the next meeting of the National Association? What's a bee-journal for if it can not keep us posted? Or is the Board of Directors so slow it hasn't decided yet? Sometimes it makes a decided difference with making one's arrangements whether he knows the date six weeks or six months in advance.

Why wouldn't it be a good thing to have it an understood thing that the meeting is always to be at the time and place of the G. A. R. Encampment, and then there would never be any uncertainty about it?

You can't get the attendance without cheap transportation, and the G. A. R. meeting makes sure of that. The Grand Army contains some good bee-keepers, and they will attend both meetings when they would not attend the National alone.

If the matter is not already decided, it ought not to take long to decide it. Unless San Antonio can get better rates than St. Paul, the thing ought to be considered settled.

NATIONAL MEMBER.

This Journal pleads not guilty to the charge of failure to keep its readers fully informed as to matters of general interest. But it has no powers of prophetic vision, and would not dare to say in advance what may be the decision of the powers that be. Neither does the responsibility lie with the Board of Directors, but with the Executive Committee of the National.

Last week we announced that it had been decided to hold the convention in Texas this year. In all probability it will be San Antonio, though of this we have no authority to speak definitely as yet.

We certainly are in favor of making it a rule for the National Bee-Keepers' Association to follow the Grand Army. It would save any feeling on the part of some when the National doesn't meet where they desire, and, as mentioned by our correspondent, the low railroad rate is always assured. We hope that the Executive Committee of the National will, after this year, make it a rule to hold the bee-keepers' convention wherever the G. A. R. meets. We also make this as a suggestion, in conjunction with some other humble members of the National.

An Armful of Bees, appearing on the first page, was sent us by Carl Opsata, of Bemidji, Minn., who writes thus interestingly about his experience:

I send a picture of myself and my first swarm of bees taken July 17, 1904, by my father. It happened this way:

The swarm came out and wanted to settle on the little birch-tree shown in the picture; I did not want them to settle there, so I rolled up my shirt sleeve to the shoulder, took the queen in a cage in my hand, and shook them off the tree and let them settle on the queen-cage and my bare arm. It was a big swarm, the weight of it being too much for one arm, so I had to brace it up with the other. I got just 7 stings, and that in spite of the fact that they were hybrids. The feeling that all the thousands of little claws created was something wonderful.

After the picture was taken I wanted to get the bees off, and then the trouble commenced. When I began to shake them off the shirt-sleeve rolled down on them, and they crawled up my arm under the shirt, and on my body. Oh, I tell you it was fun! With the aid of a little smoke I got them out and off into a new hive, where they soon fixed up a home, and are there still.

CARL OPSATA.

Bee-Hive Struck by Lightning.—When sending the picture shown on the first page, F. A. Meise, of Coatsburg, Ill., wrote thus:

I send you a photograph taken Sept. 1, 1905, of a bee-hive struck by lightning during a storm at midnight. There is an apple-tree stump on the opposite side close by. The lightning must have made a shot for the stump, but missed and hit the bee-hive. Some of the wires in the frames were burnt, combs slightly melted, and dead and benumbed bees scattered all around the hive. Some of the bees stood around benumbed, or as if they were sick, for several days afterward. I changed the combs and bees that were all right into another hive, and they went to work again, but I do not know if they will winter all right, as they were reduced in numbers.

The photograph was taken by myself.

F. A. MEISE.

Marian Hershiser, a little daughter of Orel L. Hershiser, of Buffalo, N. Y., was accidentally burned some time ago. Mr. H. wrote us about it March 26, as follows:

DEAR MR. YORK:—Our little daughter, Marian (3½ years old), had the misfortune to set her clothes on fire 8 weeks ago. She was badly burned, and is still under the doctor's care. She is just getting so she can walk again. Her right arm, face, neck and ear were burned, but there will be no disfigurement of the features.

Yours truly,

OREL L. HERSHISER.

We will all rejoice with Mr. and Mrs. Hershiser that "Marian" will recover so completely from her unfortunate accident.

More Good Photographs we can use in the American Bee Journal. If you have any of apiaries, or of things apiarian, we would be pleased to receive them. If they can not be used we will return them, and if we can use them we will so report, and also request some descriptive matter to accompany them. Who has one or more suitable photographs for our use?

The Premiums we offer are all well worth working for. Look at them in this copy of the American Bee Journal.



Contributed Special Articles

The Honey That Tickles Palates

Are We Supplying What the People Want, or Are We Trying to Educate Them to What We Want in Honey Supplied?

BY R. C. AIKIN.

THERE will be found in most parts of the country two classes of people—those who buy for show, and those who buy for service. If for show, the special requirement is that which pleases the eye; but if for service it is *quality* that is wanted.

There is a great amount of effort put forth these days to make our honey look nice—both comb and extracted. I believe in nice goods, but I also believe there is an overdoing in trying to make and keep our extracted honey *looking* nice. We sometimes sacrifice quality for looks, and thereby cut off our noses to spite our faces. Perhaps I can make clear what I mean by relating some experiences. Experience is a good teacher.

Last year was a failure with us—no crop. I had accumulations of dark and otherwise off-grade honeys that we thought we could not sell when we had a nice, clear grade of virgin goods. But with the failure I found myself without honey to supply my trade, and as people came inquiring I would tell them we were out, except some off-grade stock that was not up to our usual grade. I would get inquiries by mail from old customers in other States, and now and then would get an order with cash accompanying it.

Now, when a fellow has the cash in his fist, and needs it so very much as one naturally will after a failure, he hates to be obliged to return the money. I wanted the money, and the other fellow wanted honey. Those customers who came with a pocket-full of cash, and looked so disappointed in not being able to exchange it for sweets, I would take to the honey-house and show them some cans of the dark goods that we had been ashamed to offer before.

Don't get it into your heads that this was trash—it was pure honey; much of it had been through the solar extractor or otherwise darkened—often a can of what we call "overheated." Nearly every bit of this was very thick, some of it almost to a taffy. Often when candied (and nearly all was so) it would look like brown sugar when dug out. I would get a stick and fish out some of the brown goods and let the people sample it, and at the same time quote a lower price than standard white goods were selling at. Standard white, of course, is high this year.

Well, if there was a dark look on the face when the color only appeared, that cloud vanished when the sample reached the palate. I want to tell you that a blind man will be pleased with a thing that tastes good, if it is as black as your old wool hat.

I found these customers soon began to look off into space and smack their lips, and reach for another bite; some wanted the third and fourth bite, and some just wanted to "load up." That honey sold. I have sold lots of it that was not a bit better than I have often made into vinegar or fed to the bees. If I had some that was not off any in flavor, but just a little dark, it went as first grade. That which was both dark and a little off in flavor was sold as amber honey is usually sold. Other that was quite dark and also off flavor, but very rich and thick nevertheless, was sold at a price that would easily replace it with sugar for feed purposes if needed later.

I have for several years been melting cappings in the solar extractor, also candied sections and broken combs—yes, even clean burr and brace combs. The honey from all these when run through the solar would be more or less darkened, but was also downright *thick* and waxy in body. Such honey will please most customers who want the goods for service, and will cause customers to come again. They like it.

Comb-honey is recognized almost everywhere as a luxury, and when it sells as such must look nice; but, then, it sells at a price that makes its use more nearly that of a staple, and is so used the appearance does not count so much as does the quality that reaches and tickles the palate. The sale of chunk-

honey proves this, and we can most of us test this in our own localities.

I have known these things for years, and have been teaching and practising them, but the past year's experience has shown me more forcibly than ever that it is *quality* and *not looks* that sells almost any kind of article of diet. In some cases I was afraid to ship my dark honey, which we call "solar honey," and ordered some *good* virgin new extracted, only to have the complaint come back, "We do not like that substitute honey as well as yours." In some cases I wrote to old customers, saying I had some of the dark honey, but thick and rich; a few said, "Send a can or two and we will try it." After trying it another order would come, saying, "That honey was fine," or "was good enough for us," or some like expression, "Send us more if you have it."

This winter I had the pleasure of a trip with some of the experts in various lines in institute work among the farmers in this State. One man who is a farmer and stockman told us something about potatoes. There were many markets demanding potatoes of first quality, and willing to pay well for them. They did not want a little bit of a thing that would be half gone when the peeling was off. For the same reason they did not want one what was so rough, either from scab or such defects, or from natural roughness, that it, too, wasted a very large percent in the preparation for the table. Neither did they want a big, overgrown one that lacked quality. The speaker said, "When you pack your potatoes put in the very smoothest and even ones, leaving out every single poor one, and they will sell for more money than the whole lot would have done with the poor ones left in, and you have the poor ones to feed, to boot."

It is the potato that serves well in preparation and edible quality that is in demand. This man had proved his statements by so doing, and had contracts with certain heavy buyers for 5 years in advance, at just about double the price received for ordinary stock, poorly graded. He claimed that if the quality was brought up to a high standard, and only perfect goods put out, the price would be four or five times as high, and willingly paid by those who did not care what they paid if they got quality.

What has been said of potatoes was also true of apples. Never put an inferior apple in a box. Better throw away all damaged ones than to allow one to get in. I heard the fruitmen in several places discussing this very thing. Right here at home, where raspberry growing and shipping is a large industry, it often happens that there is a lot of soft fruit that will not carry to its destination in good shape. The fruitmen say, "Better dump all the poor fruit into the ditch than to allow any of it on the market—it would spoil the market for the better."

Unripe honey is not good, though it may be water-white. A red potato may taste better than a white one, and a green-colored apple be better than a bright red one. If looks and quality can go together it is well—he who has such a combination is fortunate; but he who has the looks but not quality won't sell the second time to the same customer. Better, every time, put out ripe, thick, rich honey than to strain one of these points to gain in looks. We have been and are putting too much stress on looks; we are making it a hobby to our own injury. No, I am not arguing that poor stuff that looks bad may be sold, and satisfy; but get quality, that will serve well, and then fix it neatly, and it will please, and put money into the purse.

We have also been making altogether too much of looks in packages. How often have I seen people hold up a clear-glass bottle or jar of honey and comment on its clearness—could just look right through and scarcely know that there was anything within except air. It is just about like the little potato—when the peeling is off it leaves just about a taste; the customer does not want many of them. Such goods have altogether too much "peeling" on them. That same honey, made thicker, even though it becomes so dark that it can be seen by moonlight, when it reaches the palate will cause scales to come over the eater's eyes, and he says I must have some more of it if it takes the hide off my fingers to earn the dollars for it.

Yes, it will do to have some honey fixed up to attract the attention when it is simply a matter of show; but when you fix it for eating, look out for quality first, last and all the time. Yes, *quality*, and not too costly a "peeling." We eat the kernel and not the hull or shuck.

And about honey that has been darkened by heat, even if the flavor has been somewhat damaged—that is changed. Slightly overheated honey is thoroughly ripened and thick; after it has stood quite a while, often for several months, it will taste better than just after the application of heat. I have many times thought a can of honey so overheated would

not do to offer for sale, and it was set aside, but after months when sampled was found to be most excellent in flavor and body. Thin honey deteriorates, but thick, well-ripened honey gets better with months of age.

Most readers will recall that I am the man who has said so much about eliminating the cost that comes between the harvesting of the crop and the time the consumer gets his fist on it. There is very much honey that, after it is off the hive and extracted, is doubled, and even trebled, in price, before the consumer gets it; this ought not to be, and must not be, if we are to be satisfied as producers. Let your extracted honey remain on the hive until thoroughly ripened, then when extracted put it up neatly, but cheaply, and in most convenient shape to reach the consumer without too expensive a "peeling," and it will be in demand. Divide the cost of that thick "peeling" between yourself and the man who eats your honey, and you will be a benefactor. This world is so full of vain show and display at the sacrifice of quality that it makes one sick at heart, and afraid to trust even his nearest neighbor and friend until dissected and proved.

Loveland, Colo.



Shipping and Selling Section Honey

BY G. C. GREINER.

AFTER so much has been said and written on the sale of our products, it seems almost like a useless repetition to discuss that subject again. At the same time, late observations convince me that the subject is by no means exhausted yet, but is still open to continued considerations and investigations. If the few remarks I intend to make in this article should happen to "strike home" occasionally, I wish to have it plainly understood that it is not my intention to reflect upon anybody's mismanagement, or criticize other bee-keepers' affairs, but rather point out some mistakes, which, if corrected, will not only benefit the individual, but be a benefit to all of us, by improving the honey-market in general.

A short time ago I made a flying visit to one of Buffalo's main markets. I had no honey to sell—simply walked up and down the street for the purpose of making observations. After spending some time in taking in the various displays in the line of household necessities, I came across several lots of section-honey in 24-pound cases stacked up on the sidewalk, the sight of which, to express it mildly, made me heart-sick. No wonder we hear complaints of slow and unsatisfactory sales. The outside appearance of those cases was anything but inviting; they were most awfully dirty and dusty, and reminded me very forcibly of some cast-away shipping-boxes that had been stored for months in some out-of-the-way coal-shed. This point alone is a great drawback in trying to make sales. At the present day we are all accustomed to find everything in the line of eatables neat and tasty in appearance. Our up-to-date groceries are full of fancy goods, and I would blame no proprietor for objecting to have packages like the above take a place among his carefully selected stock.

When I deliver section-honey to the retailer, every case is done up in paper; it is clean before it is done up, and after carrying it in a dust-proof wagon, it is, when placed on the counter of the grocery, as clean as a new-laid egg. The same is the case when I deliver direct to the consumer. Every package—be it one, two, or more sections—is neatly wrapped up in white paper, with card-board protections on the face sides and nicely labeled. All this may seem like a waste of time and expense, and I admit it looks so at first, but does it not pay in the end, if I can thereby establish and maintain a ready market for all I can produce at the highest market price, while the slipshod producer would have to be satisfied with slow sales, at lower prices, and perhaps no sales at all?

After satisfying myself in taking an outside view, I stepped a little closer to examine the contents and found a most poorly sorted lot. As near as I could tell by looking through the glass, no pains had been taken to keep the different grades separate or to sort by general appearance. Some of the sections were all finished, with bordering cells all capped, while others had all open cells on the outside, and still others were not even all built out. The packer had overlooked the fact that, next to cleanliness, uniform appearance is the most essential feature in casing honey. It pleases the eye and attracts the attention of the would-be purchaser.

To cap the climax, the honey was exposed to the outside temperature, which was at the time of my visit 28 deg. Fahr., during noon hours, and undoubtedly had been considerably lower in the morning, or when the honey was first set out.

Consequently it was badly cracked. Those cakes, that were well fastened to the frame, had cracks through the middle, or from corner to corner, and those with fastenings not strong enough to resist the contraction, were cracked loose on three sides. Now what would be the consequences if a retailer should be tempted by the low price the dealer would have to ask to find a buyer at all, to purchase this inferior and damaged lot? By the time the honey had been carted to the retailer's establishment over the rough city pavement many of the combs, already frail and brittle from the cold, would have been broken from their last support, bruising one another without anything to prevent it. Then, after the honey had been placed in the warm store and had time to regain its natural fluidity, what a nice, leaky muss it all would make! The whole affair would be a detriment to the honey-market; the retailer would not handle such mussy stuff a second time, and the consumer would not buy it again.

It is a fact, that after comb honey has left the hands of the experienced producer, not one man out of 50 knows how to handle it properly, and it is therefore to the producer's own interest to manage in such a way that the chance of breakage is reduced as much as possible, and that his shipments arrive at destination in prime condition. Too eager to make the most of our crops, we frequently put up honey that is not fit for shipping, and it is not the novice alone who fails to exercise sufficient care in this direction, but we older ones are quite liable to make the same mistake. Only such combs as are well attached to the wood, that we know will stand the rough handling of shipping, should be selected for distant markets. Anything frail or the least doubtful might better be kept at home and sold for whatever it may bring.

To prevent damage by freezing, comb honey should be shipped early. It is a great mistake to wait for higher prices (which we generally don't get), and hang on to our crops until cold weather sets in. The proper time for shipping is, as a rule, September and October. This gives the commission house or the wholesale dealer, as the case may be, a chance to dispose of their stock during November, so that by the time settled winter weather sets in, about the first of December, it may all be in the hands of the retailer, where it generally is out of the way of frost. The finest honey that would be a pleasure and comfort to handle will make an unsightly, dauby mess, if exposed to freezing weather. I always make it a point to move all my comb honey, that I may have left late in the season, to warmer quarters, where frost is positively excluded.

Next to the production of the crop, early and quick sales, the natural results of timely and attractively-put-up goods, should be the main aim of the honey-producer, if he expects to make his occupation profitable.

La Salle, N. Y.



Plea for a Better General Education—Family "Apidae."

BY PROF. A. J. COOK.

IT is now recognized by business men, no less than by professional men, that in any department of industry one can not know too much. Carnegie once decried education for the mechanic and business men as really a handicap. But in these latter years our educational methods, and the real results of higher education, have greatly changed, so that today our captains of industry value education as highly as do even the college men themselves. Few men are giving so generously, or helping so energetically, as is Mr. Carnegie, to foster higher education. He notices that business is greatly indebted to the educated men for its push forward, and he now sees clearly that even in the shop and office it is the thoroughly educated man that first reaches the goal, or, in other words, who captures the large prizes.

One reason that agriculture has not kept pace with other businesses is because, as a class, farmers are not educated. Yet the farmer has need of as thorough an education as any class of workers, whether brain or brawn counts in results. If I may be personal, I have one son. I early urged upon him the advantages of farm life to one educated for it. He, as a boy—a mere lad, in truth—elected to be a farmer. His college course was selected accordingly. He has now been on the farm 12 years and neither he nor I have ever regretted his choice. I know of few men more enamored of their work. Culture not only brings a larger measure of success, but it makes all practical activities more pleasurable. I have often felt that were I a ditcher I should wish an education. I could dig better ditches, at less expenditure of time and

muscle; could get more of satisfaction in the digging, and would have, other things being equal, a far better chance to dig out a higher realm for my life and energy.

In the late '60's I was first inducted into the fascinating field of apiculture. I visited such noted apiarists of that day as Messrs. J. H. Townley and John Davis, who were leaders among Michigan bee-men. I was no less surprised than gratified to find that these men had made collections of our wild bees. This, of course, gave to them better observation, more thoughtful study into the things of nature, and, indeed, made them broader men. I have no doubt but such study made them more successful as bee-keepers.

In this article I wish to call attention to our wild bees. We are perforce interested in them as they are related to our pets of the hive; in their study, we are made more, or better, acquainted with our hive-bees; and, best of all, we shall find much in their life economy and habits that is intensely interesting.

In the first place, let us see how we may know the bee-family—*Apidæ*—from all others of this great order. All bees feed their young on pollen, raw or digested, and thus must gather this natural flour. This is always gathered on the hind legs, and held by hairs. Thus all bees have broad posterior legs covered densely with hairs. Two parts of these legs are very much broadened—the 4th and 5th joints or parts—the tibia and basal tarsus.

Again, bees can be divided into two great groups on length of the tongue. In one group the tongue is short; in the other, as noted in our honey-bees, and more exaggerated in the *Bombus* or bumble-bees, the tongue is *very long*. Some authors make a separate family of the short-tongue bees—the *Andrenidæ*.

Once more, bees are "Solitary"—that is, each female is isolated and works by herself; or "Social," where many bees pool their labors, so to speak. The honey-bee is the most wonderful of these social species, though the bumble-bees and the carpenter-bees—*Xylocopa*—which form their nests by boring in wood—are really quite wonderful in their life habits.

While most bees are gray or black, and of sober colors, yet some, like the Italian honey-bees, are beautifully banded. Others, like many species of the *Bombus*, are resplendent in gold, or often in gold and shining black; while others are brilliant red, green and blue. Thus a fine collection of bees in almost any region will present a most attractive exhibition.

Again, all bees, in common with wasps and ants, and a few others of the order, have larvæ that are utterly helpless, and so, of course, they must have a nest or cradle for them. Some of the solitary bees tunnel in the earth for a nest. Some make mud cells—mason-bees—others cut circular and oblong pieces from leaves of flowers or plants, and glue these into cartridge-like cells where the pollen is stored and the eggs laid. Many use hollow plants for a nest, and, to my sorrow, I have found that some use key-holes as a place for their mud nests.

As already stated, the carpenter-bees bore in wood for nests. They often mutilate the doors, window-sills and cornices of our houses. These bees are large, and resemble bumble-bees, but are usually less hairy and more black. One common species in California has black females and light-yellow males. I have found that these can be driven off by use of kerosene and lard.

The bumble-bees nest in old mice-nests under clods. The queens alone survive the winters. In the spring the queen selects the nest, gathers pollen, and deposits the eggs. As the footless, helpless larvæ eat out cavities, these are waxed, and thus we see the big thimble-like cells for honey and young bees. The queens are large, and thus in the early spring we see only the large queens. Later the small workers abound, when the queen remains in the nest and gives herself solely to egg-laying. Later in the summer, queens and drones—male bees—appear. As with the honey-bees, the males come from unimpregnated eggs. I suppose the queens result from a more hearty diet of richer food. The queens and drones fly forth to mate, as do our common bees. I once saw two bumble-bees mate. While yet in copulo they came to the earth, and the act was fatal to the male.

The value of all bees in pollinating plants is inconceivably great. Of course, the social bees, because of their exceeding numbers, are most in evidence in this important role. The bumble-bees, because of their very long tongues, are the chief pollinators of red clover. As is well known, they had to be taken to Australia and New Zealand before the seed of red clover could be produced.

30 Heilbronner Strasse, Berlin, Germany.

Beeswax—Its Origin, Composition, Adulteration Tests, Etc.

BY ADRIAN GETAZ.

WE can see by the article on page 211, how one difficulty in detecting adulteration arises from the very composition of beeswax itself. For instance, a test with an insufficient quantity of alcohol, or at a too-low temperature, would leave a portion of the myricine undissolved, and convey the impression that the wax was not pure. Another and more serious difficulty is that the chemical agents employed to test the wax acts on many other substances also. For example, the soda and potash form soaps with nearly all the oils and fatty substances as well as with the wax.

HOME ADULTERATIONS.

We can distinguish two classes of adulterations—those made by the farmers and bee-keepers themselves, and those made by skillful dealers and manufacturers. The first ones are usually very crude and easy to recognize. The substances usually employed are tallow, rosin, paraffin, and any kind of entirely foreign substances like flour, sand, etc. Melting the wax will separate at once such things as flour or sand.

Pure beeswax has a slight but agreeable taste—a slight aromatic odor. It becomes plastic in the warm hand, without oiling or coating the skin, and is, under pressure, decidedly adhesive, with the separated parts welding together perfectly. When broken, the surfaces are granular, with a dry, unpolished aspect. When cut, they show a glossy, waxy lustre. When chewed, the wax does not stick to the teeth, but crumbles in the mouth. A small percentage of adulteration will often cause it to clog. Rosin makes the fracture smooth and shining. As cold alcohol dissolves the rosin better than the wax, it is possible to have the rosin all dissolved before the wax is much altered. The dissolved rosin can be separated by evaporating the alcohol.

Tallow gives the wax a soft, dull appearance. Its taste and smell can be recognized when chewing the wax.

The paraffin is harder to detect. Like the tallow and other hard fats, it causes the wax to melt at a lower temperature. It can be detected by the aid of strong sulphuric acid. A piece of the suspected wax is put in the acid. The acid destroys the wax completely, forming a black, carbonized paste, while the paraffin rises on the top untouched. The acid should be as concentrated as possible, as the addition of water prevents its action on the wax. There should be plenty of it, as the resulting black paste should be liquid enough to permit the paraffin to separate. Only about four-fifths of the paraffin is separated by that process even at the best.

GENERAL TESTS.

The first general test that can be applied is that of density. Procure a piece of wax known to be pure, make it in a small ball, and put it in a glass of water. Add gradually some alcohol until the wax barely floats, and when pushed down remains about where it is without going up or down, or very slowly. Try a piece of the suspected wax; it should behave the same way. If it does not, it is adulterated and no further test is necessary. If it does, it might be adulterated if the substances added are of the same density as the wax. Be sure that no bubble of air is left in the ball, or adheres to the outside.

The second test is the melting point. Pure wax melts at 144 degrees, Fahrenheit, when fresh, and about 2 degrees higher when old. If no apparatus is at hand the test may be made approximately by putting a small piece of pure beeswax and one of suspected wax on a piece of tin, and holding the tin over a lamp. The two pieces should melt at the same time. It is necessary that they should be of the same size and shape, and that the tin should be kept moving over the lamp so that its whole surface is at the same temperature.

The third and fourth tests are by dissolving the wax in benzine, and also another sample in pure spirits of turpentine. In both cases the wax should dissolve completely, and the solutions should be perfectly clear. Needless to say that these tests, like the preceding, are not always final, because other substances than wax dissolve in benzine and turpentine.

MR. GAILLE'S TEST.

Mr. Gaille, a chemist of Switzerland, gives the following as the best known general process: In the first place the wax should be tested as to its density and solution in pure spirits of turpentine. If neither of these tests detects any adulteration the following is to be done:

A small piece of the suspected wax is placed in a glass of

concentrated alcohol, and heated until the wax is dissolved. If anything fails to dissolve it is evidently an adulteration. If the dissolution is complete the glass is laid aside to cool for at least half an hour. The liquid, which is more or less cloudy, is filtered and added to about the same amount of filtered or rain water. A small piece of litmus paper (the druggist will tell you what it is) blued with a little ammonia is then placed in the mixture and the whole shaken together. After a quarter of an hour the paper should have remained blue. If it has become red, the wax is adulterated. If it has not changed, the liquid is then filtered and must be clear after the filtration. It is claimed that a wax that has stood all these tests is pure, as any of the known adulterants would have shown at one time or another during these operations.

MANUFACTURED WAX.

I use the title "manufactured wax" purposely. There are "waxes" or mixtures called wax of almost every color, degree of hardness, or melting point, that may be desired; some of them without any particle of real beeswax whatever. But do not suppose that these are frauds altogether. In a great many cases they answer the purposes far better than real, pure beeswax would do. Needless to say that when any such is used for making comb foundation, it is an unmitigated fraud of the worst kind.

Such "waxes" are obtained by mixing together in varying proportions all or parts of the following substances: Beeswax, paraffin, ceresine or mineral wax, stearin, and different kinds of animal and vegetable waxes.

One of the text-books I have mentions several kinds of mineral wax. The best known, and by far the most used, is the ozokerite. When purified it is called ceresine, or natural paraffin. It looks more like paraffin than like beeswax and can be separated from beeswax by the use of concentrated sulphuric acid, as described above for the paraffin. It dissolves entirely in spirits of turpentine, but little in boiling alcohol.

Among the animal waxes there is the Andaguies wax, produced by the different kinds of stingless bees of South America, and gathered by the Indians with more or less dirt of all sorts. It is different from that of our bees.

The Chinese wax is much whiter and finer than the beeswax. It is the product of another kind of insects which lives on a tree or bush called there the "wax-tree." It is an evergreen with white flowers similar to those of the cherry or plum trees. These insects, by biting or otherwise attacking the leaves of the trees, cause the formation of balls similar to those that we often see on the leaves of oaks and other trees, only they are larger and of a purple color. They contain the insect's eggs in large numbers. They are gathered in the fall and kept in a secure place through the winter. In the spring they are hung on the trees. Soon the eggs hatch out and the insects attach themselves to the leaves. The liquid they produce rapidly transforms itself into a white wax which covers the leaves and twigs until they look as if they were covered with snow. The wax is scraped off with a thin, sharp, flat piece of bamboo.

There are also bees and real beeswax in China.

The vegetable waxes are not due to any insect but are a product of the plants themselves. The white powder-like substances seen on plums or figs is something of that sort. It is found on the leaves of some plants or trees, on the berries of some others, and even in the bark of the cork trees. Each kind is somewhat different from the others, but all are too brittle to be used alone.

STEARIN.

The stearin has another origin altogether. It is white, almost transparent, much harder than beeswax, does not burn quite as fast, and for some purposes is far superior. It is prepared by heating tallow and dissolving it in boiling ether several times until the stearin is pure.

A French bee-keeper, Mr. Butet, says that by putting a little of the suspected wax previously melted in a boiling solution of soda, the pure wax will form a beautiful white soap, while the ceresine, if there is any, will remain untouched.

BLEACHED WAX.

The wax to be bleached is melted with some water and a little cream-of-tartar. The whole is kept on the fire and constantly stirred a while. Then the melted wax is poured in a trough having several rows of holes in the bottom. Under the trough is a cylinder revolving with the lower part plunging in iced water. The streams of melted wax are carried around by the cylinder and solidify in the water in the form of threads or ribbons. These ribbons are placed on large cloths stretched on wooden frames, and exposed during several days

to the action of the sun and the dews. They are then put in sacks and piled in a room for two or three weeks. A kind of fermentation occurs and the ribbons weld together. They are then melted again and the same operation carried through one or more times, if necessary. At the last melting, 5 per cent of tallow is added, otherwise the bleached wax would be too brittle. It is now quite white, somewhat translucent, and much harder than the unbleached wax. A slight chemical change has also taken place. Knoxville, Tenn.

Some Good Advice for Beginners

BY G. M. DOOLITTLE.

A CORRESPONDENT writes that he began taking the American Bee Journal last summer, through the influence of a friend who wished to interest him in bees; and that the reading of the same has caused him to think of buying some bees this spring. Therefore, he wishes that I would tell him something as to how he should begin, in this, to him, a new business. He says he is not very well off in this world's goods, so does not want to lay out more than is necessary to make a good start.

My advice to this man, and all others who contemplate going into the apicultural field, would be, Do not pay out any large sum in making a start; \$40 to \$50 should be all that is needed for what I should call a good start. Three or 4 colonies is all any beginner should buy, unless he has had considerable knowledge in handling bees in working with some well-informed apiarist. Twenty dollars should buy three or four good colonies in good Langstroth hives. Then, if the correspondent is at all good with carpenters' tools, I would advise him to make 4 more hives as nearly like those the bees are in as he is able to. Not but what he can buy hives, probably as cheap as he can get the lumber and make them, if he counts his time as anything; but this making of his first hives will be a good schooling to him, and "rivet" his interest to the bees so he will be more likely to make a success of the undertaking than he would if he bought everything ready made.

The lumber and comb foundation necessary for these hives should not cost more than \$10 or \$12, so that he will now have an outlay not to exceed \$32 for his bees, and hives sufficient for making 4 new colonies, which is increase enough. To the ambitious beginner, this will seem like a small increase; but I wish to say that the doubling of our number each year increases our bees as fast as our knowledge of the art will increase. Then listen: 8 the first year, 16 the second year, 32 the third, 64 the fourth, 128 the fifth, 256 the sixth, and 512 at the end of the seventh; and the latter number is all one man can profitably work to advantage, unless he hires help, or has members in his own family to help him.

Do not get crazy over reports of some keeping thousands of colonies, nor over the puffs of wares by those having said wares for sale, and pay out your hard-earned dollars (earned in some other business) more than just to get a start. Hundreds of thousands of dollars have been squandered in this way on bees, and the only "show" that could be made for it a few years later was a lot of hives piled in fence-corners, containing a lot of moth-eaten combs.

Make your bees and yourself self-sustaining, after you start, not paying out on the bees more than the bees bring you in, remembering that if you cannot make 4 colonies pay, you cannot 400. Then if you happen to make a failure of the business, you will have the consolation of knowing that you have sunken but \$40 or \$50, instead of from \$400 to \$500, or perhaps as many thousand, as some have.

Besides your hives and bees, you will want a smoker, a bee-veil and a screwdriver or chisel, to use in opening hives. This part of the outfit should be gotten for about \$2.50, delivered at your post-office.

Then, you want, *most of all*, one or two good bee-books to teach you the fundamental and first principles of the bee-keeping art. Right here is where more beginners fail than anywhere else. The \$30 or \$40 required for bees and hives comes easy enough; but \$2.00 for two bee-books looks as big as all the rest; yes, and often bigger, so they are not purchased, and, not being purchased, they are not read; and the result generally is about the same as we used to read in our old school-books, "For the want of a horse-shoe nail the shoe was lost; for the want of a shoe, the horse was lost; for the want of a horse the rider was lost; and all for the want of a little horse-shoe nail." So, many and many a beginner has been lost, and also lost much of his worldly possessions, because he would insist in entering the bee-keeping ranks

without a good book on bees, not costing more than \$1.25 to \$1.50.

After you have the book, or books, and have read them until they are as familiar to you as a "nursery rhyme," then you are ready to subscribe for one, two, or three of the bee-papers; and as you gain in knowledge, I would advise taking them all. But, hark! Don't make the mistake in substituting the papers for the books. You *must* read the books in order to comprehend and digest what is found in the papers, otherwise it is like feeding the three-months'-old babe on meat and potatoes instead of milk. Don't forget that you are a *babe* in the bee-business when you first commence, and that you want the "sincere milk of the word" for a while.

In the above you will have all that is really necessary for the first year, or at least all I had when the start was made. Thirty-five dollars was the outlay I made, and I have never paid out one cent since on the bees but what they have earned for me. And from that \$35 beginning, the bees have built the buildings for my home; purchased the farm here and in the State of Arkansas; given me as good a living as heart could wish; helped me to support the church, Sunday-school and missions; and make others happy, who through misfortune and physical disability have a "hard row to hoe" through life; besides something laid away for a "rainy day" or old age.

And, lastly, I must tell you, if you wish to succeed, that you must be enough interested in the bees to look after them often, to see that "no stone is left unturned" that will make them profitable to themselves, for when they are thus profitable, they will nearly or quite always be profitable to you. You must be so interested in them that what you do with them will be as play. You cannot succeed in any business where all you do is done grudgingly, or where you are watching the sun all the forenoon to see if it is not "most dinner-time," and, at 2 o'clock, are thinking when it will be supper-time. No, no!

After having been in the business ever since the spring of 1868, there is nothing so fascinating to me as work with the bees. Even in the mid-winter it is a pleasure almost beyond measure to go into the bee-cellar and satisfy my longing eyes on the almost motionless cluster of bees as they hang below the frames in their quiet repose, waiting for the "breath of spring" to start them into life and activity again.

And, remember that the getting of honey, and from that money, is not all there is of bee-keeping. The life and health you can get out of the work done in an apiary is of far more value than all the millions of dollars accumulated by those who have sacrificed their life and health in their getting.

Borodino, N. Y.



Baby Nuclei—Feeding Bees—Reading Bee-Literature—Cleaning Oil-Cans—Hives and Spacers

BY C. W. DAYTON.

REPLYING to Mr. Doolittle, on page 46, I wish to say that although that second paragraph sounds rather harsh, it was written in a spirit of admiration rather than censure. I remembered Mr. Doolittle's article on "Drifting From Our Moorings," and in studying Dr. Miller's book I was surprised to see that he has been so conservative as not to be drawn after the later methods we read so much about, especially those relating to queen-rearing. It is my belief that the whole business has progressed entirely too rapidly for its own good. I tried from 50 to 75 baby nuclei the past season and I have given it up, and gone all the way back to the plan that was in use in 1880. I shall continue to operate a few in coming seasons in order to be sure my decision is a wise one, and also to test any new ideas which may come up. I have been obliged to do the same in respect to hives and selling honey or else my business would have "run aground" long ago. I have seen bee-men sink thousands of dollars during the past ten years simply by following the prevailing methods of doing business. Or, to put it in a nut-shell, let some one else do their contriving at two ends of their business.

There are several apiaries about here where the bees were fed in the open air as mine were. They sustained heavy losses. But I have doubts if the owners have a faint dream of what caused their losses. I knew there had been warnings that in feeding in the open air there should be an evening up of the stores, but I fail to call to mind when there was a warning that colonies will become so indifferent or dormant as not to take enough to prevent starvation when they have access to the feed every day.

It is said of man that one hour of sleep before midnight is worth several after midnight. Man will put his nerves in a tension and go without this early sleep. But bees do not imitate man. They obey Nature. I have consulted with neighboring bee-men who did not know, or else gave reasons, which, if they had given fair attention, they would have known could not be so. There are some 20 bee-men at Chatsworth, and I am the only one I can find who takes a bee-paper. I look to the bee-papers for verification of my observations. These bee-men must be oblivious as to what is agog in the bee-world.

If it gets so there is not enough profit in the bees they turn their attention toward grain, stock or wood, and when bees are profitable it is because of the abundance of flowers and honey rather than management. If there is not skill in production there is sure to be lack of skill in selling the product. And the time has arrived when the sale of the product is greatly hampered. Lack of love for the bees and study of their ways and implements for their management are the causes of the business not attaining to the height it should. I do several other kinds of work, but these help the bees to succeed. Not only to get supplies for the bees, but to reduce expenses which otherwise would be obliged to be paid out of the profits from the bees.

Most people who conduct two lines of business cause each one to stand upon its own foundation. The true object should be to broaden the foundation upon which our cherished business (the bees) stands. The other way it narrows the foundation by taking away our profits and interest of mind in the bees. Mind is one of the important ingredients in the foundation. We should choose such lines as will contribute to the success of the bees. Change prevents the mind getting into ruts and staying there. Getting into ruts is narrowness in the extreme.

I am a subscriber to 6 bee-papers, 3 fruit journals, 3 farm papers, 3 iron and wood-working journals, 2 health journals, several religious papers and 2 popular magazines. After studying some of the other papers for awhile, and then coming back to bees, I find the mind rested and clear, and this study often brings ideas into the bee-line which are commonly used in these outside operations, but were never thought of as being applied to bees.

Every evening I engage in an interesting chat in some of these papers. But when it comes to work, I depend almost entirely on books. Not papers. Papers I give away. In the books I expect to find the cream. Everything sorted out and boiled down in better shape than I could spare time to provide the ability to do. Of course, different compilers have different views or systems, but I soon see which is best suited to my needs, and I know exactly in which book to look for the plan. I liken the bee-papers to crucibles in the assayer's workshop, but books should be the store-chests for the fine gold—or the summing up of the whole matter.

For illustration: In rearing queens I often use Alley's method, but at some times of the year it is almost impossible to get long rows of larvæ of the right age, so I change to the Doolittle method. In this it is difficult to see the very small larvæ. I take the comb containing the larvæ inside a building close by a window, but in the shade. When I get the wax and am ready to lift the larva I move the comb out into the sunlight for about a second and the smallest larva can be as easily seen as if it were under a microscope. Keeping the eyes in the shadows causes the pupils of the eyes to enlarge so that the rays of light pass through a larger opening, and more rays of light strike on the retina of the eye-ball and consequently a picture of the larva is perceived by a greater number of optic nerves. This magnifies the object.

TO CLEAN KEROSENE OIL CANS.

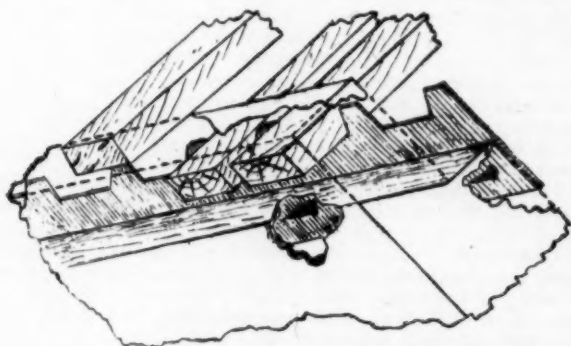
I first fill them with water and let them stand a day or two. This removes the loose oil. Some of them will be clean with water only. If you happen to put hot soapsuds into a can containing a quantity of loose oil the next can it is put into may be almost clean already, and the oily suds will make it worse than it was. The soapsuds should clean all but three or four out of a dozen. Those which still smell of kerosene I put over a fire which is as hot as possible without melting the solder. Kerosene is a volatile oil, and dry heat can remove what soapy water cannot reach.

After the oil has been driven out, the gummy residue which has collected in the seams of the cans will be dried down and smell musty. In such cans drop a half ounce of beeswax. Keep the can hot to melt the wax. Tilt the can to make the melted wax follow the seams down the corners and around the bottom, and up the opposite seam to the top seams of the can, and it is easy to coat the inside seams and remove the last particle of smell.

Now in order to see just where the wax is going we should stand within an open door. Rays of white light (from the clear sky) must pass in at the cap and strike the inside of the can and be reflected back out the cap or we cannot see anything within the can. Rays of skylight passing in from many directions as it would out-of-doors or before two or more windows will criss-cross one another and obstruct the fainter rays coming from within the can. The one who understands this can clean cans twice as well, and twice as rapidly, and earn four times as much as the one who thinks it all depends upon elbow-grease and soap. Even in simple matters we have need of photography and chemistry. Even those who would ignore these if shown where to hold a can would soon wobble out of the right position, and not be able to find it again.

HIVES AND FRAME-SPACERS.

Again, let us take a 10-frame hive with frames spaced $1\frac{1}{2}$ inches apart, and allowing $\frac{1}{2}$ inch for the extra space, we have the width of the hive as $15\frac{1}{2}$ inches. This is for loose frames. If the frames are spaced by spacers they will work equally well spaced $1\frac{3}{8}$ inches apart. Allowing $\frac{3}{8}$ inch for the extra outside space we get $14\frac{1}{8}$ inches for 10 frames—a difference in the width of the two hives of $1\frac{3}{8}$ inches. The Langstroth hive is 18 inches long and 10 inches deep;



$1\frac{3}{8}$ off one side equals 246 cubic inches. This 246 cubic inches means bees. This amount of bees would fill 14 pound sections entirely full or 28 sections half full—more than a super. It shows that the advantage of close spacing is one super quite fairly filled with bees. Do you think it would pay to put 10 cents' worth of spacers in a hive? The spacer shown here is simply a strip of 28-gauge galvanized-iron cut out one-inch wide and as long as the rabbet of the hive. The notches can be chopped out rapidly with a die costing about \$10, or a pattern can be laid on and marks made and then snipped out with the tinner's shears. Then the leaves can be bent over and pounded down flat in a vise. But the spacer should be so arranged that the bees can travel under the ends of the top-bars in the rabbet behind the spacer.

The spacer shown on page 53 is a good one where bees are not moved. But in moving, the spacer would jump out of the notches and travel, and the combs would soon get together and crush bees. Then there would be a smell of stings and crushed bees, and other colonies will get scared and become overheated, etc. It is easy to tell by scent how the bees are standing the ride, by walking behind the load. That spacer is simple, but it will be found considerable labor or else requiring expensive machines to make it.

The spacer on page 47, Fig. 2, allows the frames to rest flat on the rabbet where they would be glued fast. Consequently plain staples driven into the rabbet would be of equal service. I use plain staples in the upper stories where accurate spacing is less consequence than in the brood-chamber. Another thing, where we use close, accurate spacing, the frames are more difficult to be gotten out of the hive, and should not rest upon a rabbet that will permit them to be glued down.

Chatsworth, Calif.

8—Dadant Methods of Honey-Production

BY C. P. DADANT.

FOR the successful prevention of swarming, it is not sufficient to have large hives. Other things are necessary. One of them has been already mentioned by me, in article No. 3, that is, the removal of drone-comb and replacing it with worker-comb, in colonies that we do not wish to use as reproducers. The production of a large number of

drones tends to the increase of natural swarming. Some of the experienced bee-keepers who read this will think that this rule works also from the other end, that is, that a tendency to natural swarming causes the production of a large number of drones. That is true.

When the queen has been breeding largely and the sexual organs are fatigued by too constant laying, she seeks rest by laying eggs in drone-cells, for the eggs that she lays in drone-cells are not impregnated from the spermatheca, and there is a very probable change of sensations to her that gives her rest. This is the only explanation that has been advanced of the reason why she seeks for drone-cells at times. So an old queen will lay drone-eggs more readily than a young and vigorous one. But we find that when a hive is overcrowded with drones, when already well supplied with worker-bees, there is a feeling of unrest. The workers are compelled to hang out at night, and sometimes in the daytime for those burly and noisy fellows stay closely at home, except for a couple hours of the day, and they are very much in the way of the workers. It does not take much of an effort to picture to ourselves the discomfort which they must create, and the consequent propensity to sallying forth to establish another colony.

In a good harvest, the bees feel too good-natured to destroy the drones—evidently the requirements of nature are followed according to circumstances—and it is only when a disappointment in the crop follows that the bees begin to exterminate them, angered by their laziness and gluttony. So the result of a surplus of drones is a tendency to swarming. It is, therefore, a very good policy to remove all we can of the drone-combs. Some of our teachers in apiculture hold that we must leave a little drone-comb, or the bees will tear down worker-comb in order to be able to rear drones. I confess I have often tried to test this, but have never found an instance where it had taken place.

A friend bee-keeper once said to me triumphantly that the bees did change the worker-combs to drone-comb; that he had a sheet changed to drone-comb in one of his hives. I asserted that it must be a mistake. "No," said he, "that hive had every frame filled with foundation."

We opened the hive in question and in the meantime he told me how he fastened foundation and said that he always put in three wires whenever he used foundation. On examination, the sheet in question had no wires, and he was forced to acknowledge that there must have been a mistake.

Sometimes, if full sheets of foundation are overlooked with bees when first given to the colony, some of the cells will be changed to drone-cells by stretching; this is easily detected. At other times, worker-comb may break down from heat and drone-comb will be built in its place. But whether the bees do change worker-comb into drone-comb, in case we leave them no drone-comb at all, there is very little danger of this, for I have never yet been able to remove positively every cell of drone-comb from a hive. There will be cells of "accommodation," little patches in the corners, and occasionally a few stretched cells. But a few hundred drones are not to be considered. It is the big sheets of drone-comb, especially when they are in the center of the brood-nest, as they are sometimes placed during manipulation by a beginner who does not take notice of little things. It is the big sheets, I repeat, that make trouble.

Have you ever figured how many drones may be hatched in a piece of drone-comb a foot square? Let us calculate this together. A square inch of drone-comb contains 18 drone-cells on each side, or 36 cells. In a square foot there are 144 square inches—144 times 36 makes 5,184 drone-cells. Not only will those over 5,000 drones be in the way and induce swarming, if the season is at all good, but you must bear in mind that they have cost the bees about as much to rear as a patch of the same size of worker-brood, which would contain about 7,800 worker-bees. I do not mean to say that there would be 7,800 workers reared in the same space, for the queen might not fill that space with worker-eggs, and could not fill it in the same time, but there would be a chance for more workers and less drones, and it would be better to have the queen idle, or losing eggs, rather than laying such a quantity of drone-eggs.

Those drones cost you a great deal to rear, and, after they are reared, they are in the way, and are expensive, for they always eat at home. L'abbe Collin, who was very accurate in these matters, states that in their out-door flights the drones lose about 8 percent of their weight, which is very probably only a portion of the loss, and evidences how much food they must consume. We have, over and over, ascertained that the colonies that had few drones were less likely to swarm than those which, other things being equal, had many drones.

Another matter is ventilation and comfort. If the hives are exposed to the heat of the noon sun, its direct rays shining on the alighting board and the entrance, we know the bees will swarm more readily. If the space allowed for entering the hive is too small, there will be discomfort from that cause. Some may remark that, in a state of nature, the entrance to the hive is the same—exactly the same—summer and winter. That is true, but we have the bees in domesticity. We want to get a larger yield from them than they would produce if left to themselves, and we must look after small details if we wish to succeed.

My aim is never to allow a colony to cluster on the outside, while the crop lasts. I want to see every bee at work. When the crop is over, it is a different thing. They must be hanging somewhere then, and whether on the outside or the inside matters but little; but when the crop is on, we not only must keep them at work, but we must make things comfortable for them, so that every bee will be at work, either inside the hive or outside in the fields.

A bee-keeper who long ago dropped out of the list of contributors—James Heddon—said, "Our business is a business of details." This is emphatically true, and the apiarist who does not bother himself about details will sooner or later fail. Hamilton, Ill.

Home-Made Hives—Hive-Colors, Etc.

BY ALLEN LATHAM.

THE chief pleasure to me from writing on bee-keeping is derived from reading the occasional comments which the articles call forth. To know what another thinks of one's ideas, whether there be commendation or censure, must always afford interest. The columns of the American Bee Journal are too valuable to be used in reciting the numerous foibles and conceits which, though interesting us hugely, have little to offer for the entertainment of the other fellow. When, however, points are raised which relate to the true welfare of the bee and of the bee-keeper, then an exchange of opinion can become of great value. Accordingly, I am going to depart from my usual custom of keeping silent. On pages 183 and 199 Mr. Hasty and Dr. Miller raise points which I feel constrained to consider further.

Mr. Hasty suggests strawberries to me. Why? Oh, because the best strawberries are those which have enough acidity to make the sweetness all the sweeter. If Mr. Hasty occasionally drops a little acid, he quickly seeks to mollify the effects by an oozing of honeyed sweetness that can scarcely fail to appease all hurt.

I suppose, Mr. Hasty, that you or the printer let the hyphen slip in on the wrong side of "box." My hives are not box-hives, though many boxes go into their construction.

I wish that Mr. Hasty would tell just what he has in mind when he says: "Apart from his way of making the body of it, say." Does Mr. Hasty still lift heavy stones whenever he opens a hive? My covers never blow off, though there is nothing but cover above the hive. Let the cover be made with a deep rim, and nothing short of a hurricane will blow it off.

No, the paper will not rot under bricks or stones, for all water quickly evaporates from these dark-colored covers, unless, indeed, the shade be rather dense.

No trouble at all about ice in spring. The dark color of the paper will cause the ice to melt so that it is always out of the way long before any sane bee-keeper is monkeying with his bees. I am not sane, and so I simply slide the ice off after the sun has loosened it, as it will invariably do every day fit to take a peep at the bees.

Will Mr. Hasty kindly name any advantages to be gained by tilting hives forward? I'd like nothing better than to have him stand his advantages up in a row so that I could snow-ball them.

Dr. Miller's genial way of "saying his piece" is no less thawing than Mr. Hasty's is melting. I sometimes wonder what the good "Old Reliable" would be were these two gentlemen to be taken away. It would be an awful example in subtraction for me.

Dr. Miller, it would be hard to convince a skeptical person that a dark hive can be cooler in summer, but warmer in winter. Had I not found it true by my own observation I think that I should be an unbeliever. Though a dark hive will cool off more rapidly than the white one in summer, it will get no cooler in winter. Both hives are as cold in winter, on the outside, as they can be; that is, they are as cold as the surrounding air, approximately. The white hive seldom gains much heat from the outer world, the black hive frequently

gets it. The extra heat of the black hive may become lost readily, but after it is lost the black is as well off as the white.

Let it be written in red letters that I do not advocate black for single-walled hives. I advocate black for double-walled hives only, and should hesitate to paint single-walled hives black. I should fear that such hives would get too much heat if in the sun, and would cool off too much if in the shade. For winter, however, they would be excellent.

I wish to say here, too, that in some locations hives cannot be kept in the shade wisely. I find that, unless the shade is broken—not dense—and there is free chance for the winds under the trees, the honey is poorly ripened. If one has well-pruned fruit-trees on high ground, or shade such as they would furnish, he can expect good results with hives set in the shade. But if his hives are set in a shady nook where the winds gain little access, and where the dew is wont to linger well into the forenoon, he will find his honey to be of light body and inferior flavor.

On page 185, Mr. Davenport treats us to another of those irritating mustard plasters such as he put upon us a year or so ago. As I read this latest article I glanced around for a brick, but realizing that I could not throw it so far I chose another weapon.

It is difficult to understand Mr. Davenport's attitude, and probably my thought is the same as that of hosts of other readers. What is he after? I have a happy thought! Perhaps he is waiting to be "called!" So here goes! Mr. C. Davenport, I don't believe it!!! Norwich, Conn.



Convention Proceedings

Report of the Wisconsin State Convention

BY HARRY LATHROP.

(Continued from page 278.)

A good paper was read from Mrs. Millie Honaker (who was not present), on

ECONOMY IN BEE-KEEPING

Like everything else, bee-keeping demands the expenditure of a certain amount of money, labor, and time, before satisfactory results can be obtained. More, however, than is necessary to provide all things needful is not called for, and is actual extravagance. True economy is judicious saving—simply another name for good management. It does not mean doing without a necessary article to save its cost, but reducing cost, if possible, and using to the best advantage afterwards. Nor does saving labor and time mean leaving a thing undone which it would be profitable to do, but, instead, finding a shorter and easier method of doing it. How to economize in a monetary way will be our first consideration. After this we will study a little into ways and means of saving labor and time.

Hives are the bee-keeper's first and greatest essential. Unfortunately, they are also his most expensive, even when obtained as cheaply as possible. To buy them ready to use at retail is to pay an almost prohibitive price for them. To buy in small quantities in the flat, of retailers, is also to pay too much. If they must be had already cut, they should be bought enough at a time to enable one to take advantage of quantity prices. In 50 to 100 lots they may be obtained for about two-thirds what they would cost a few at a time, especially if bought already nailed and painted. To be sure, none except the most extensive bee-keepers ever need so many hives in any one season, but a number could order together, and in this way all obtain the same advantage. This not only applies to hives, but to other supplies as well.

But a still further saving may be accomplished in many instances by ordering from wholesale lists, gladly furnished to small retailers by manufacturers and their head agents. Turning to one such, recently sent me, I find that I can obtain quite a reduction from regular catalog prices, especially on quantity lots. There are always a number of small bee-keepers in every neighborhood who are glad to buy what little they need at home, thus enabling one to dispose of enough to take advantage of both quantity and wholesale prices. These wholesale prices are

not granted to every one, of course, but usually to one in every community—as a rule, to the most extensive and wide-awake bee-keeper who applies for them. Besides what may be saved in this way, there is always a considerable discount allowed on out-of-season orders, and all this is, to my mind, economy which may be profitably practised.

But returning to hives once more. If the bee-keeper has upwards of 40 colonies, especially if he expects to increase to any great extent, it will pay him to put in such machinery as is necessary to cut down his own hives. Particularly is this true if he has already some kind of available power with which to run it. Cutting machinery alone costs but little, and, if many hives are needed, will easily pay for itself several times over in a single season. We have used a home-made hive-cutting machine ever since we began keeping bees, and have found it in every respect perfectly satisfactory.

Even if one has no power of any kind, it might pay to buy one, especially on the farm, where it could be used for many other kinds of work. A gasoline engine of from one to three horse power is now comparatively inexpensive, and one of the coming essentials on the farm.

But there are other ways of managing. One extensive bee-keeper whom I know solves the hive-making problem to his satisfaction by hauling his material to a lumber-finishing mill and hiring it cut up into hive parts. A few days' extra work and a small cash outlay enable him to get his hives at a figure considerably below factory prices.

Again, in most high-class carpenter shops there are small power-saws, and, as a rule, the owners are glad to do, for a reasonable sum, such work as may be had during the slack winter season. If many hives are wanted, it will be found cheaper to hire them cut than to buy them so.

But, as said before, the better way is to put in such machinery as is needed, if some kind of suitable power may be had. Our little machine cost us, all told, something less than \$12 for material, the work being done at home by the master himself. Any good carpenter, however, could put up one equally as good in a couple or three days, so that cost of building need hardly be considered. Up till last summer it was run with a light horse-power, but is now attached to a little gasoline engine, used for pumping water and other light work. With one operator from 20 to 30 complete hives may be cut in a day. With an assistant the number may be easily doubled. We have never done a whole day's cutting at any one time, but I am sure I have not over-estimated its capacity. Hoffman frames, either square or beveled; hive rabbets, even hand-holes, are neatly and rapidly cut out. It does not, of course, cut a dove-tailed corner, but instead we make what we consider just as good, which is a halved corner.

Besides cutting hives, we use this machine for many other kinds of particular work—window and door frames, anything, in fact, which ordinarily requires the use of the miter-box, is cut out here. It is really surprising how often, and for what a variety of work, it is used. Start the engine, throw on the belt, and it is ready at a moment's notice.

We are often asked what our home-made hives cost us. We do not use a standard hive ourselves (which is one more argument in favor of the machine, since specialized factory-made hives always cost extra), but we frequently make it for others. Estimating 15 feet of \$40 lumber to the 8-frame, 1½-story hive, I find, including labor, they cost about 65 cents each. This is an over-estimate, if anything, as it takes hardly 15 feet of lumber and some parts may be made of narrower and less expensive material.

But hives, while the most important, are not all the bee-keeper must have. Comb foundation is another important item. No up-to-date bee-keeper would consider it economy to do without a generous amount of foundation, even if it cost much more than it does. But while it would still pay to use it at a considerable advance over present prices, this does not mean that we should pay more for it than is absolutely necessary. All of us produce more or less wax. Could not something be saved by sending it to some reliable manufacturer to be made into foundation for our own use? I am offered 28 cents for clean wax. Cannot I have this made up for less than the difference between the price of the wax and the cost of foundation? I think I can. Any way, I am going to try.

There are, however, various other things which we must have and which we cannot make ourselves, or hire made of our own material. Sections are perhaps the most expensive of these, and about which we hear the most

complaint. Like hives, they should be bought in quantity, at least as many as can be used and disposed of in any one season. Even if a few are left over, if properly cared for they will be just as good another year.

But while I would advise buying as cheaply as possible, I would not advise using a poorer quality or restricting the quantity. It is no economy to use rough, discolored sections and take less for our honey on account of them. Nor is it economy ever to buy or use a cheap article because it is cheap, or to do without a needed article to save its cost. We should not hesitate to buy what is needed, and, as a rule, the best is the cheapest. True economy, to my mind, lies in buying wisely rather than cheaply, although as cheaply, certainly, as is consistent with quality.

But, as said before, it is no economy to do without what is needful. For instance, to get along forever without a change of stock. A few queens each season are ordinarily an economical investment, since it is only in this way that vitality and vigor of stock can be kept up to the highest standard. I know Dr. Phillips says improvement can be best brought about by in-breeding, but not promiscuous in-breeding, such as necessarily happens in the ordinary apiary. There is no practice more disastrous in its results than this, let it be where it will. A single requeneed colony will often produce enough more honey to pay for two or three queens, while the value of one new queen's influence in the yard is beyond estimation.

Economy of time and labor come next. Both have a considerable money value, especially on the farm where hard-to-get and high-priced help must be employed to do that which the master cannot get to do himself. As a rule, to save labor is to save time, and therefore money, which means to increase profits.

But even when to save labor is not to save time, it is still worth while to spare one's self as much as possible. We are not likely ever to suffer for exercise, and it is something to escape exhaustion whenever we may. Mechanical power is always cheaper than physical, and should be employed when available. Here is where our little engine comes in handy again. The engine-room is tight and well built, so we do our extracting here. It is also large and commodious, and adjoining the original honey-house, so it is convenient to use in this way. We have always before run the extractor by hand, and many a time with a tired arm, but this is now a thing of the past. By the way, both cream-separator and washing machine will also be operated in this way during the major portion of the year, thus saving a considerable amount of other hard work. This plant cost us quite a neat little sum, but as we look at it, it is a good investment.

Convenience is always economy, so everything needful to do the work expeditiously and well should be provided. Anything which will save labor and time to a greater value than its cost is an economical investment. In this list may be included numerous small articles and many large ones. Foundation cutters and fasteners, tanks with faucets, strainers, and all such, are worth much more to the bee-keeper than they cost him. An efficient smoker, good veil and gloves, and several other things, might also be mentioned.

Along this same line I would say that any machine or other labor-saving device which will do the work required of it enough better or faster to save in labor or time the difference in cost between that and another, is the cheaper in the end. No bee-keeper of any consequence ever made a greater mistake than to buy a one or two frame extractor. It is like a 50-egg incubator—little more than an aggravation to the soul. A large machine will do a little work just as well as a little machine, and whenever more is required it is not found wanting.

It is also economy of labor and time to keep everything in and about the honey-house and apiary in readiness and in good condition. Time, for instance, occasionally to sharpen the uncapping knife—but being a woman, I have to own to sometimes using mine dull. Still a little spice, judiciously administered, usually results in a speedy improvement.

Attention, we are told, is the cheapest element in the apiary. To do a thing when it should be done takes no longer than to do it out of season, and may mean the difference between profit and great loss. It is not economy often to put off a thing beyond the time when it should be done to save the cost of a little help. There has lately been quite a discussion in one of our most prominent newspapers along this same line. One man claimed to have lost 50 colonies because he could not find time to give them needed attention at the proper season. A few dollars

spent for help would have been economically invested. It is probable that most of us have had a similar experience, though perhaps not so disastrous a one. It takes no more time to feed needy colonies in September than it does in November, though perhaps time to do it early might not be so available. In that case a little help, let it cost what it would, would be wise economy.

In conclusion, let me repeat what was said in the beginning, that true economy is judicious saving—another name for good management, and another for wise spending as well.

Mrs. MILLIE HONAKER.

BEE-KEEPING—ANCIENT AND MODERN

It is a frequent expression of Scripture and secular writing, that a land where milk and honey flows is highly prosperous. Honey was used as a great luxury, as food and as medicine. Jacob, when sorely afflicted, sent his sons to Egypt to buy grain, and to appease the governor (Joseph) said to his sons who were to start for the second trip: "If it must be so now, do this: take of the best fruits in the land in your vessels and carry down the man a present, a little balm and a little honey, spices and myrrh, nuts and almonds."

The Lord God said to Moses: "I have surely seen the affliction of my people which are in Egypt, and have heard their cry by reason of their taskmasters: for I know their sorrows. And I am come down to deliver them out of the hands of the Egyptians, and to bring them up out of that land into a good land and a large, into a land flowing with milk and honey."

The Lord God said unto Moses: "We came unto the land, whither thou sentest us, and surely it floweth with milk and honey."

Deuteronomy 6, 3: "Hear, therefore, O Israel, and observe to do it; it may be well with thee, and that you may increase mightily, as the Lord God of thy fathers hath promised thee, in the land that floweth with milk and honey."

Joshua 1, 6: "For the children of Israel walked forty years in the wilderness, till all the people that were men of war, which came out of Egypt, were consumed because they obeyed not the voice of the Lord; unto whom the Lord sware that he would not shew them the land, which the Lord sware unto their fathers, he would give us a land that floweth with milk and honey."

Jer. 11, 5: "That I may perform the oath which I have sworn unto your fathers to give them a land flowing with milk and honey as it is this day. Then answered I and said: So be it, O Lord."

Jer. 32, 22: "And hast given them this land, which thou didst swear to their fathers to give them a land, flowing with milk and honey."

Ezekiel 20, 6: "In the day that I lifted up mine hand unto them to bring them forth of the land of Egypt into a land that I have espied for them flowing with milk and honey which is the glory of all lands."

Exodus 16, 31: "And the house of Israel called the name thereof manna, and it was like coriander seed, white, and the taste of it was like wafers made with honey."

Levit. 2, 11: "No meat offering which you shall bring to the Lord shall be made with leaven, for ye shall burn no leaven nor any honey in any offering of the Lord made by fire."

Deut. 8, 8: "A land of wheat and barley and vines and fig trees and pomegranates, a land of olives and honey."

Levit. 32, 13: "He made him ride on the high places of the earth that he may eat the increase of the fields; and he made them to suck honey out of the rock and oil out of the flinty rock."

Judges 14, 8: "And after a time he returned to take her, and he turned aside to see the carcass of the lion, and behold there was a swarm of bees and honey in the carcass of the lion."

Judges 14, 18: "And the men of the city said unto him on the seventh day before the sun went down: What is sweeter than honey, and what is stronger than a lion? And he said unto them: If you had not plowed with my heifer, you had not found out my riddle."

1 Sam. 14, 25: "And all they of the land came to a wood, and there was honey upon the ground. The honey dropped."

2 Sam. 17, 29: "And they brought honey and butter and sheep and cheese for David and the people who were with him."

1 Kings 14, 3: "And take with the ten loaves, and cracknels, and a cruse of honey, and go to him: he shall tell thee what shall become of the child."

2 Kings 18, 22: "Until I come and take you away to a

land like your own land, a land of corn and wine, a land of bread and vineyard, a land of oil and of honey."

2 Chron. 31, 55: "And as soon as the commandment came abroad, the children of Israel brought in abundance the first fruits of corn, wine and oil and honey."

Job 29, 17: "He shall not see the rivers, the floods, the brooks of honey and butter."

Psalms 19, 10: "More to be desired are they than gold, yea than fine gold; sweeter than honey and honey-comb."

Prov. 24, 13: "My son, eat thou honey, because it is good, and the honey-comb, which is sweet to thy taste."

Prov. 25, 16: "Hast thou found honey? Eat so much as is sufficient for thee, lest thou be filled therewith and vomit it."

Isa. 7, 15: "Butter and honey shall he eat that he may know to refuse evil and choose the good."

Jer. 41, 8: "But ten men were found among them that said to Ishmael: Slay us not, for we have treasures in the field of wheat, and barley, and of oil and of honey."

Ezek. 3, 3: "And he said unto me: Son of man, cause thy belly to eat, and fill thy bowels with this roll that I give thee. Then did I eat it, and it was in my mouth as honey for sweetness."

Ezek. 16, 13: "Thy raiment was of fine linen and silk, and brodered work; thou didst eat fine flour and honey and oil."

Math. 3, 4: "And the same John had his raiment of camel's hair and a leathern girdle about his loins, and his meat was locust and wild honey."

Psa. 19, 10: "More to be desired are they than gold, yea than much fine gold; sweeter than honey and honey-comb."

Prov. 5, 3: "For the lips of a strange woman drop as a honey-comb and her mouth is smoother than oil."

Prov. 16, 24: "Pleasant words are as honey-comb, sweet to the soul and health to the bones."

Prov. 27, 7: "The full soul loatheth a honey-comb, but to the hungry soul every bitter thing is sweet."

The ancients had plenty of honey from the beginning of time. Honey and wax were used in great quantities. But the means of obtaining honey and wax were cruel, rude and primitive. Very little literature, if any, exists to tell the story. The importance of the honey industry would justify research in the old history, and some wise men might dig in the old, dusty libraries to find the sweet truth about the home industry of our ancestors.

Bee-keeping is an important industry, especially with the help of modern inventions—the modern hive in place of hollow trees, or cracks in the rocks; the movable frame, comb foundation, the honey-extractor. To get honey and wax from bees now, we need no fire and brimstone; we simply shake the bees off and let them live. We need not fear cross bees any longer, but make them well-behaved by introducing gentle queens or queen-cells. We need not fear any longer that fell destroyer, "foul brood," but follow the counsel of the foul-brood inspector.

Bee-keeping is nothing mean, but elevates the mind. The bee gathers honey only and no poison—never; and is clean always.

Bee-keeping will last as long as Time will last. It is an industry now more than ever. The ancients had their annual sheep-shearing and made holidays, calling on the sheep-breeding fraternity for mutual help and feasting. So we have our love-feast in mid-winter, meditating about the sweet harvest in summer. There are untold millions of acres of nectar for bees to collect. The number of consumers is increasing. Freight trains loaded with honey tell of enormous harvests and profits. The outlook, all in all, encourages bee-keeping. Horace Greeley recommended, "Go West, young man, go West." We as well say: Keep bees, young man (and woman, too), keep bees!

REV. H. A. WINTER, Octogenarian.

Quite a little was said in favor of placing bees on the summer stands so early in the spring that they would not fly out for a week or more after being taken out. This is new to a good many, but I think more will try it.

The election of officers for the ensuing year resulted as follows: President, N. E. France, of Platteville; Vice-President, Jacob Huffman; Secretary, Gus Dittmer, of Augusta; and Treasurer, A. C. Allen.

I will close by saying that we had as good a convention as would be possible without the ladies and the editors; but, dear ladies, and twice dear editors, don't let it occur again. You must come with us next time. Bridgeport, Wis.

Report of the Michigan State Convention

BY MORLEY PETTIT.

The Michigan State Bee-Keepers' Association held its annual convention at Jackson, Feb. 1 and 2, 1906. The sessions were well attended by bee-keepers from all parts of the State, as well as from adjoining States and Ontario. The latter Province was represented by R. F. Holtermann, W. A. Chrysler, N. Smith, Mr. Stewart, and Morley Pettit. Mr. E. R. Root, editor of *Gleanings in Bee Culture*, contributed one of the most entertaining parts of the program. These outsiders were very cordially received, and tendered a hearty vote of thanks for their presence and help in the program and discussions.

Pres. W. Z. Hutchinson occupied the chair, and together with Secretary Elmore M. Hunt, who had so energetically advertised the convention, conducted one of the liveliest conventions it has been the writer's privilege to attend.

A NON-SWARMING HIVE.

One of the features of the convention was a non-swarming hive shown by L. A. Aspinwall. He has been carefully experimenting with this hive for 17 years, and was persuaded to make it public, although there are features about it with which he is not quite satisfied yet. The principle involved is that the cause of swarming is *bees*. The ordinary hive becomes overcrowded with bees, and the result is swarming. To overcome this, more space must be given for the bees to cluster while producing wax, etc. Like any other, Mr. Aspinwall's hive has the combs together for winter and spring, but as soon as the swarming season approaches he removes the combs containing the least brood, and spreads the remaining combs by alternating them with slatted dummies, which give wide spaces between the combs for the bees to cluster in, but so divide these spaces that nowhere is there more than a bee-space, and no comb will be built. The comb-honey supers are arranged in the same way. Slatted separators are used, with the slats turned crosswise of the separator, so that the spaces between sections are much wider than in ordinary supers, and the bees can cluster these spaces practically full. He uses drone foundation in a part of his sections.

It is thought that with this hive even Carniolan bees could be used for comb-honey production with large results, and practically no desire to swarm.

Mr. Aspinwall attaches great importance to strong colonies, held together throughout the whole year with no swarming. Any increase desired can be made by nuclei. He detailed results he had had from this hive which showed quite decidedly that it is worth at least the serious consideration of all progressive bee-keepers.

Along the line of non-swarming, R. F. Holtermann advocated a large brood-chamber, and correspondingly large storage capacity. He considered swarming a misfortune. Some bee-keepers want increase to replace winter losses, but, as a rule, bees can be bought cheaper than they can be produced by swarming. The first symptom of the swarming impulse is the production of drone-brood. The second is the starting of cell-cups. The factors which induce swarming are a crowded condition of the hive, high temperature, bad air in the supers due to lack of ventilation. To prevent swarming, put wedges between the bottom-board and the hive, giving a large entrance; use a 12-frame Langstroth hive, and a good queen will fill it just as well as she will an 8-frame brood-chamber. Use at least two supers on each hive, so as to get a hive capacity in proportion to the production of bees and honey.

As to race of bees, Mr. Holtermann prefers a hybrid of about three-quarters Italian and one-quarter black.

A ventilator slide in each extracting super gives fresh air directly into the super without its having to pass through the brood-chamber and up. When bees are kept together without swarming throughout the season, they go into winter quarters in a more uniformly good condition, and come out in the same way in the spring.

Mr. Aspinwall here referred to the chapter on swarming in Mr. Hutchinson's new book, where he says swarming is a thing of the past. This is a luxury, a comfort; to be able to produce good crops of honey without the worry of swarming. One can get all the white honey without swarming, then make increase of nuclei in the fall season.

Morley Pettit endorsed what Mr. Aspinwall and Mr. Holtermann had said about the advantage of holding bees together without swarming. The wedges for large entrance; the divider, to allow for a double layer of bees

around the outside of the sections in the super; and the upward ventilation he had learned from his father, Mr. S. T. Pettit, and had always used. Upward ventilation is essential to the most successful production of extracted honey; it is equally good in comb-honey production, with this difference, that it should be closed as soon as the sections are filled and capping begins.

Many who admitted that the large brood-chamber and the Aspinwall hive were a good thing, objected that they had their supply of hives, and it would be expensive to change. Mr. Pettit replied that it paid farmers to throw away their cradles and buy reapers; then their reapers were discarded for self-binders, etc. Hundreds of dollars were spent on farm implements which are of no more practical value to farmers than are the improved hives and machinery to bee-keepers.

Messrs. Hutchinson, Root, Aspinwall, Holtermann, and others, spoke along the same line—that the secret of success in any business is to hold oneself always ready to adopt the very latest improvements. No matter how much is invested in a machine, be prepared to discard it for a better if by so doing the cost of production can be ultimately lowered. Business principles must be followed to insure success.

Mr. Bingham, of smoker fame, referring to super ventilation, said the draft is always downward. This is the bees' patent way of ventilating, to blow air out at the entrance. Instead of an opening in the super, he would accomplish the same result by sliding one super slightly forward and the next one back. Bees will build honey right up to the ventilator.

E. R. Root, speaking of bees coming into a large entrance, said he had often watched them fly right in and alight in the under side of the cluster.

Mr. Holtermann said the bees never use the super ventilator for an entrance except when by any accident the queen gets up, and they are using the super for a brood-chamber.

Morley Pettit said some object, that cross bees come from these ventilators to sting people going along behind the hives. The ventilators should be narrow, about $\frac{3}{4}$ -inch by 4 inches long, then have them open only in the honey-flow. As soon as robber-bees begin to hunt around, the bees of the hives are on the defensive at the ventilators, but not at other times.

The following paper was read from C. P. Dadant, on the

MANAGEMENT OF OUT-APIARIES

I believe it is a mistake to write long essays for bee-conventions. The greatest gain derived from a convention is in the discussions of the subjects by the members present. A slight introduction of the subjects by papers is sufficient, in my estimation, and I trust that for this reason you will excuse the shortness of my essay.

Just now the tendency seems to be towards larger apiaries at home and a less number of out-apiaries. It is quite probable that in a case of most extraordinary and favorable conditions it may be advisable to keep as many colonies in one spot as lately reported from a noted New York State bee-keeper, but in many instances the keeping of over 100 colonies in one spot would prove unprofitable. This, at least, was our experience. It is not so much during the heaviest flow that a large number of bees in one spot is objectionable, for the large crops seem to produce flowers enough for an incredible number of colonies, but it is during inferior seasons, and especially in the early and late part of the season that a large number of colonies in one spot is unavoidable in my experience. The fruit-bloom of a number of orchards may prove quite beneficial to an apiary of 100 colonies, if there are not too many other small apiaries in the immediate vicinity, but with 300 or 400, it is quite probable that the bees would not gather enough even to keep up breeding without some help from the apiarist. We, therefore, have considered it advisable to keep not more than from 80 to 100 colonies in one spot.

It is necessary for me to say that we use large hives, and as these hives give full scope to the breeding of prolific queens, it is possible that a larger number of colonies in small hives could be kept profitably in the same space.

Our first attempt at keeping out-apiaries was made in 1872, with the production of both comb and extracted honey. We soon ascertained that unless we produced extracted honey altogether, in large hives, it would be out of the question to control swarming entirely, and with an out-apiary we think swarming is still more of a nuisance than it is in the home yard.

Swarming may be acceptable to those who wish to in-

crease the number of their colonies and do not desire to go to the trouble of making artificial swarms or divisions, but to the man who has enough bees and who only desires increase enough to make up for winter losses, swarming is objectionable, for it is usually the hives that would produce the greatest quantity of honey that do swarm, and what we want from our bees is honey, not more bees.

For the above-mentioned reasons, it has been our aim to fit our out-apiaries with the necessary implements for the production of extracted honey. We have at each place two sets of supers with full combs for each hive. There are colonies which require only one super, but there are some that require 3 and even 4, and an average of 2 supers full of combs for each colony is about right. If the season is above average, the crop is usually protracted enough to enable the honey to ripen before the end, and we extract all that is ripe, to make room for more.

We keep a few hives ready for swarms, in case some should escape; but in an experience with out-apiaries of more than 30 years, we have so few swarms that in many cases it has been found unprofitable to watch for the few that might escape. When colonies get a good start in large supers already filled with combs, and are kept supplied with a sufficient amount of empty comb, there is very little propensity to the swarming fever, except in such colonies as may be making preparations for superseding their queen. We have usually secured the increase by rearing queens from our best colonies and building up nuclei containing them into full colonies by supplying them with combs of brood from time to time.

We never haul the bees back home, unless it is for a radical change from one spot to another. We never haul the combs home to do the extracting, but we do all the manipulations on the spot, thus saving time and annoyance in hauling things back and forth. I have seen apiaries where the work was done by taking the full supers home and bringing them back again, but I am satisfied that our method is more practical and expeditious.

With well-supplied apiaries, less than a dozen trips are needed to do the most important work in an out-apiary: One trip in early spring to investigate the after-winter conditions, and clean out the dead bees; two trips during the spring to look after queenless colonies and feed the needy ones; one trip to put on the supers; two visits during the harvest to add room or equalize supers; two trips for extracting; about three visits more for the late crop, and one for putting the bees in winter quarters. If artificial increase is wanted, it will require probably four additional visits. In very bad seasons, extraordinary circumstances may make more frequent visits needed, but in those bad years, no extracting will be done, and some economy of time will be secured thus, though much to the regret of the apiarist.

This method of management, is, in my experience, the most economical for the keeping of out-apiaries.

C. P. DADANT.

There followed a discussion on drawing home combs of honey to extract. Many good bee-keepers advocate having a central establishment fitted with storage-tanks, power for running the extractor, etc., then haul home the supers to extract, and haul the empty combs back to the yard again. They claim that the trip must be made morning and night anyway, and it is just as well to take a load of empty supers and bring a load of full ones. Then the honey is home without further hauling. Often there are not suitable buildings at out-yards for extracting.

Mr. Manley overcomes the honey-house difficulty by setting up stakes and covering with canvas to make a tent. This is a very hot place to work, but it keeps the bees out, and the honey strains well for being warm.

Morley Pettit said he had tried the plan of hauling combs home to extract and found it very objectionable. There is the extra teaming; supers and combs have to be drawn home and back again; the difficulty of keeping robber-bees out of the supers while so many are exposed at once on the wagon; and some bees are sure to be around making it dangerous to take a team to the wagon. The honey is all cold when it gets home, and must be heated artificially—a slow and expensive process—else extracted and strained cold, which is disagreeable and unsatisfactory, to say the least. All this work has to be done at a time when moments are dollars, and when often even the honey is not wanted at home.

Most of Mr. Pettit's honey never comes home, but goes direct to the station, probably in an opposite direction.

E. D. Townsend quite agreed with Mr. Pettit, and told

of one yard in Northern Michigan where the honey does not even need to be loaded on wagons, but goes direct from the honey-house to the car, placed on a convenient siding for the purpose.

QUEEN-EXCLUDERS—POLLEN IN THE SECTIONS.

Almost every one voted to use queen-excluders in the production of extracted honey. For many reasons we do not want the queen nor the drones in the super-combs. In the production of comb-honey they are good to keep pollen out of the sections, but increase the tendency to swarm.

With reference to pollen in sections, Mr. Aspinwall mentioned his drone foundation. Bees very seldom store pollen in it, and as it is the natural size for storing honey, they seem better satisfied with it in sections than the other. If some drone-comb is allowed in the brood-chamber, the queen almost never goes up to lay in it.

PERFORMING BEE-MEN AT FAIRS.

One of the features of the convention was a talk by E. R. Root, on showing bees in a tent at county fairs and other public gatherings, and performing feats in handling them with bare hands and arms, which, to the uninitiated, are on a par with lion-taming and snake-charming. This attracts great crowds, advertises the bee-keeper and his honey, and sells large quantities of honey at the time. Mr. Root said he had this idea from Mr. S. D. House, of New York State.

Mr. Holtermann complimented Mr. Root as his "grandson" in this idea, for he had exhibited bees in a tent at the Toronto exhibition 11 years ago, and Mr. House learned it from him.

A discussion on obtaining better profits on honey followed. Mr. Aspinwall showed that profits depend largely on decreasing cost of production, by improved hives and machinery.

Mr. Soper brought out the disadvantage of offering small packages of honey.

Mr. Chrysler said, always keep your dealer safe. Never let him lose on your honey, and he will feel safe to buy from you at any time.

The main point in the sale of honey is to produce and market a good quality of honey. Show dealers that you have perfect confidence in your honey and so inspire their confidence.

The following paper was read by E. D. Townsend:

FEEDING BACK TO GET PARTLY-FILLED SECTIONS COMPLETED, AT CLOSE OF HONEY SEASON

In discussing the subject of feeding back to get all of the part-full sections in a good, marketable shape, we have a subject of very great importance, for with the Barber, as the comb and extracted honey from the same super plans, as with any system known, even if we try to get the last super of the season in the extracted form, we still have the season to contend with, for next season may be only half as long as last, and there you are, with sections in all stages of completion, and the only alternative is to feed up these half-full sections for the market, and the object of this paper is to tell the members of this convention how to do it in a satisfactory manner.

Now, I am going to tell you what all practical comb-honey producers know, as by this way I can better illustrate the main point. It is this:

As the honey season begins to draw to a close, usually, with a gradual falling off of the honey-flow, the bees begin to cap the sections a little thinner each day, until 5 or 6 days after the flow fails, when the capping will cease entirely for want of honey to work with. Now, at this point, we move all the sections from the hives, no matter in what stage of completion they are. They are all taken to the honey-house and those that are in marketable shape are cased up, and all the part-full sections are put back into the supers to be fed for completion, selecting sections that are as near alike as possible for each super; that is, the fullest sections are put in one super, then the medium in the next, then those with only a little honey in, in another. The object of selecting sections that are in the same stage of completion is so each super will be finished in a more uniform manner.

I told you above, as the season draws to a close, sections were capped over thinner and thinner until a few days after the season closes, then capping ceases entirely. While the sections finished during the main flow might weigh 15 to 15½ ounces, these later ones likely would not weigh over 11 to 12 ounces; while the 15-ounce section will have the regular bee-

space between the section and separator, the light-weight section would have much more space than usual. Now, the part-full sections that we are going to feed to get finished for market, are all the way from very little or none at all capped, to nearly all capped; and what openings there are, are somewhat travel-stained.

Now, when we commence to feed, the unsealed portion of the section is drawn out to the regular thickness, or a little thicker than the 15-ounce section mentioned above. This makes an ugly-looking, patched capping job, with part thin, travel-stained surface, and part plump and flat, with brand new cappings—an unsatisfactory job, and honey that will bring only a little better than No. 2 price.

Now the remedy is so simple that it is a wonder that all haven't practiced it before. It is to uncapping the sections we are going to feed, and let the bees draw them out to the regular thickness of comb, and cap them over anew. The results were more than satisfactory, as the sections were the best filled and the heaviest weight of any we produced last year. But the main point is, it sold with our fancy and No. 1, at 15 cents on the car, while if fed in the usual way it must have gone in a grade by itself at a lower price.

Then if one produces comb-honey without separators, this idea is even more valuable. You simply uncapping the fat, crooked surfaces deep; or, in other words, level up the sections with the uncapping knife before feeding, by thinning up the thick combs, and uncapping the thin combs by just taking barely the cappings off, then grading them as to weight, etc., when putting them into the super, as I told above.

Anyone who has never tried, cannot imagine what a job it is to match up partly filled sections from different supers to feed back, but in this new method the uncapping-knife does the matching, as all are trimmed smooth and even, and will fit in any place equally as well as if separators had been used.

E. D. TOWNSEND.

UNCAPPING MACHINE.

A labor-saver which has long been desired seems now to be an accomplished fact. Pres. Hutchinson read a letter from a New York State bee-keeper asking how many members would be willing to pay \$35 for an uncapping machine. He was not at liberty to describe the machine, or give the man's name. Then E. R. Root described a machine made and used by a California man, who has proved it to be a success. In principle it is two rollers about 7 or 8 inches in diameter, which turn at a rate of 1,000 to 1,500 revolutions per minute. Thousands of fine points on these rollers pick the cappings off the combs as it passes down between the rollers.

R. F. Holtermann said he was working on the same idea independently, so we have the uncapping machine coming from three different sources, and can feel assured that it will be a success.

FOUL-BROOD INSPECTION.

A prolonged discussion on foul-brood inspection brought out the views of many of the members on this important question. It was agreed by all that the work of controlling or doing anything towards eradicating the disease was entirely too great for one inspector, and the meager Government grant.

Morley Pettit said the discussion reminded him of similar discussions in the Ontario convention. The same conditions and the same needs prevail there. At the last Ontario convention it was decided to divide the Province into three divisions, with three inspectors. This was a step in the right direction.

Mr. Root moved that a committee of Mr. Hutchinson, the present inspector, Mr. Hilton and Sec. E. M. Hunt, be appointed to consult the Legislature and endeavor to get a larger grant and more thorough inspection. Carried.

SIZE OF SECTIONS.

Mr. Root, when called upon to speak on this subject, said at present in the United States sections sell in this order: The 1½ bee-way 4¼x4¼ sections sell best; the 4¼x¼ plain sections sell next in order; and the 4x5 plain sections come last in the list. Plain sections do not grow in preference as rapidly as when they were first introduced, but they are steadily making headway.

Mr. Aspinwall showed a shipping-case for comb honey without glass in the front, and with a new device for holding the slats in place in the bottom.

Mr. E. D. Townsend read the following paper:

THE HARVESTING OF EXTRACTED HONEY

Our practice in producing extracted honey is to furnish surplus combs enough to hold the whole crop of white honey, being careful towards the close of the season not to give any more room than is necessary to hold the crop, for it is just as necessary that extracted honey should be sealed and finished, as it is that comb-honey should be sealed and finished before taking from the hive.

Then, 10 days or 2 weeks after the season closes, when the bees are all through capping and curing their honey, we are ready to extract.

At this stage, if we have made a good guess, and have not given unnecessary room, 90 percent of all the honey in the hives ought to be capped.

Before getting to the kink I am about to explain, we used to go over the yard and select all the full, all-sealed upper stories, and extract them by themselves; then the part-full and unsealed upper stories were extracted by themselves. Then when drawing off from the tanks into 60-pound cans, the last can or two drawn from the best grade—that is, the thin honey that always rises to the top—was kept separate, and went with the No. 2 mentioned above.

Now with the ordinary way of supplying abundance of store-combs, without any regard as to how they are sealed and finished, it will be seen how easy it is to get as much as one-third of one's crop of this No. 2 grade. This large amount of No. 2 honey on our hands, that had to be sold at quite a little less price, got to be a serious matter from a financial standpoint. Then we take quite a good deal of pride in producing a superior article of extracted honey, and we did not quite relish the idea of having so large a percent of this inferior honey to sell, that we had just as lief our customers would think some one else produced. Similar experiences as these set us to thinking, and we "got onto" the kink I will explain. It is as follows:

We set two extractors near together for convenience. We use, for this method, a 2-frame and a 4-frame extractor. Now as part of the combs to be extracted are brought in from the hives, they are sorted over, and any that are not all sealed, are run through one extractor *before* uncapping. Then the combs go to the uncapping tank and are uncapped and extracted in the other extractor. And right here is where the benefit of the second machine comes in; and that is, everything is finished, as we go, before the honey gets too cool to extract well, as it surely would do if we should try to do all the work with one extractor.

This is the only practical way of getting *all-sealed* extracted honey that we know of, and I assure you this best grade is a fine article, and we get our pay in a ready market at from 1 to 2 cents a pound above the market price for our honey.

This No. 2 honey is used to "feed back" to get the part-full sections of comb-honey completed, that I told about yesterday. Those who feed bees honey for winter stores, can use this thin honey to feed up light colonies for winter. We sold what we had left at a less price than the better grade, and bought sugar to feed our light colonies, as we like sugar best for winter stores. While the best grade of honey produced with this system is of a rich, oily body, with a very fine flavor and aroma, the No. 2 is thin, and "off" in everything that goes to make good honey. I have a sample of each grade at this convention, extracted at the same time, from the same colonies, for inspection.

E. D. TOWNSEND.

While honey can be ripened after it is extracted, the general opinion was that it is better to have it practically all capped in the comb and left with the bees as long as possible before it is extracted.

O. H. Townsend said that to ripen honey off the hive it must be kept in a room at a temperature of 80 to 100 degrees. There are sometimes damp summers, with a very slow flow, when bees do not ripen honey well. In such circumstances artificial heat should be used.

Mr. Holtermann suggested that Government tests should be made to ascertain the best methods of ripening honey.

E. R. Root said this matter was tested last season at the Medina yards, and it was found that the longer the honey was on the hive the more it was chemically changed, and even after it is capped this change goes on.

RACES OF BEES.

Mr. Aspinwall said, if the non-swarming hive is an assured success, he prefers Carniolans. The Manleys, R. F. Holtermann, Morley Pettit, and others, agreed with this.

Mr. Holtermann had tried them 8 or 10 years ago and condemned them, but when he tried them recently with large hives he found them more successful.

Mr. Pettit found them gentle to handle, energetic to gather honey, and warm-blooded to build up brood early in spring; but on account of their warm blood they are inveterate swarmers. However, he has a decided strain of Carniolan blood in his bees.

O. H. Townsend prefers Carniolans.

DYSENTERY AMONG BEES.

The question was asked, "Can bees have dysentery without pollen?"

Mr. Aspinwall said, "Yes." There are two causes of dysentery—pollen and watery honey. Bees wintering on pure, ripe honey assimilate it nearly all. The hull of the pollen, or the water of thin honey, have to be avoided.

E. R. Root said that one great cause of dysentery is cold, which causes over-eating.

R. F. Holtermann said it is largely due to nervousness. You can close a hive in summer, shutting the bees in, and bring on dysentery through their worry at being shut in.

OFFICERS AND EXHIBITS.

The officers for the ensuing year are: President, W. Z. Hutchinson; Secretary-Treasurer, Elmore M. Hunt, of Bell Branch.

Morley Pettit was appointed to judge the exhibits, and awarded prizes as follows:

Best 10 pounds of Comb-Honey—E. D. Townsend.

Best 10 pounds of Extracted—Oscar Smith.

Best 10 pounds of Beeswax—W. H. Every.

Most Practical New Invention—Mr. Aspinwall's non-swarming hive.

Best pound Section of Honey—Oscar Smith.



Conducted by LOUIS H. SCHOLL, New Braunfels, Tex.

An Invitation to the National

This resolution was adopted, extending a cordial invitation to the National Bee-Keepers' Association to meet in Texas this year:

WHEREAS, The National Bee-Keepers' Association promises to hold its next annual convention in Texas; therefore, be it

Resolved, That the Nueces Valley Bee-Keepers' Association will welcome and appreciate the holding of such convention in our State, and we invite the several bee-keepers' associations in Texas to keep that event in view, and make the occasion one worthy of our great State.

The election of officers takes place at the next meeting, on the first Monday in April, having been postponed as a larger attendance of the members is then expected.

The Apiarist was adopted as the official organ of the Association.

Nueces Valley Bee-Keepers' Convention

An interesting meeting of this Association of Southwest Texas was held in regular session in Beeville, Feb. 5. Not a large number of the members were present, owing to unfavorable weather.

The veteran bee-keeper, Mr. L. Stachelhausen, was a welcome attendant, and the bee-keepers were indeed glad to have him among them.

Prof. Albert F. Conradi, State Entomologist, and in charge of the apicultural work at the Texas Experiment Station, addressed the convention upon some important matters connected with the work at the State Experimental Apiary. He offered some valuable suggestions, and asked the hearty co-operation of the bee-keepers over the State by offering suggestions as to the most profitable line of experiments that are desired. He also stated that the money set apart for this work was limited, and that for this reason not all such experiments could likely be carried on in one season.

Mr. Conradi asked for the appointment of a committee, by the Association, to outline such experiments as they would like to have carried out at the experimental apiary. This committee are: J. W. Taylor, Will Atchley, C. A. Butts, G. W. Hufstedler, and W. H. Laws.

Prices on honey cans were discussed, and a purchasing committee to confer with can dealers was appointed, as follows: Will Atchley, J. W. Taylor, and W. C. Nutt.

Dr. C. S. Phillips offered suggestions as to making exhibits at different places in the State.

Attend Bee-Keepers' Conventions

Conventions of bee-keepers are good things, and should be more largely attended by our bee-keepers. If we take into consideration the large number of bee-men who keep bees—and most of them keeping them for a livelihood—and then look at the small number generally in attendance at local and district—yea, and even the State and National—meetings, it makes one wonder why it is that not more attend such gatherings.

I have always said, "Attend the bee-keepers' conventions. They are of the utmost importance, for much is learned at such meetings that can not be obtained elsewhere." The more experienced and older members of the craft are thoroughly familiar with the changes that are brought about in a man who attends such conventions. Take a man who stays at home, who has his own notions, his own views about things; he is generally down in "a rut"—(sometimes quite a narrow one). His views and notions border on that of narrow-mindedness. In his mind his apiary is the only one, his methods are better, and his ideas are only worth considering. For just such persons the bee-keepers' conventions are a good place. By rubbing up against some of the better bee-keepers much of this is worn off—the otherwise square corners soon round off—and a change is brought about that makes a better bee-man—better for himself and for the others of the craft. Instead of being a "dread" to his fellowmen—for such these men often are, who will dump their crops on the market and cause the "slump" that so much talk is made about, besides doing the many things not quite in accord with the better ideas of the older members—such bee-keepers soon "learn something at the convention that they had never dreamed about."

For weeks afterward, after that convention, the brain will fairly buzz as "the many things that were talked about at the meeting" are turned over and considered and thought about. "Why, Smith said so and so. Jones told us about such and such. Then there was Brown who gave one of the best talks I ever heard on that subject. And I never knew what the 'Question-Box' meant. Why, I could have listened to them answering those questions all day. Then that big bee-man I roomed with—he could surely talk bees to perfection. He told me how to keep bees, and how to make money out of them!"

"I know that I could do about as well if I would only study the subject like some of those fellows do that I met. I never could see the use of all these things—bee books, bee-papers, and such things as bee-conventions. Now I wouldn't take a hundred dollars for my trip and what I learned, and I am surely going to try to have the nicest apiary in this section, and make some money so I can have a 'say' at the next meeting."

"Yes, sir; I am bound to attend next year's meeting, because what would be missed could not be paid in dollars and cents."

"Why, I had almost forgotten about our ride home on the train. There were eight of us, and how we did talk! Even I could tell them something by this time, for I was not afraid any more—in fact, I couldn't keep quiet any longer. It was surely a surprise to me, when I explained my way of doing when I don't want any swarms, and they told me that was indeed the easiest and most practical way out. Of course, they had not tried it, but as it seemed so easy, and because I haven't had a swarm for six years, as I did not want too many bees to keep me out of the field, and I still got a whole lot of honey, they thought my idea worth trying, anyway. I surely was proud that I could give even some of those fellows they called 'big lights' a little light on a subject, which they seemed to think was the hardest problem for them to solve."

"Yes, I surely learned lots, and I'm going to make use of it, too, now. I can hardly wait until the proceedings come out in print."

"And then we had our picture taken, too. I am won-

dering how I will look among all those *real* bee-keepers—and I must hurry and become one of them as quick as I can."

Such are the thoughts of one who has returned from his first *bee-meeting*—yea, and from many more. He returns not only having learned something himself, and to become a better bee-keeper, but he has been instrumental in dropping a little hint here and there, perhaps, in his own rude way, that may lead to the development of some useful methods for which bee-keepers have longed.

Well do I remember my first beekeepers' convention. My experience was not very different from that just outlined. Everybody thought I could not be induced to say anything, and this was only confirmed by my dissenting when asked to have a say, or give *my* opinion. No, I did not say anything, but how much and what I heard! My head was crammed. Once more at home, and in the bee-yards, and how my head buzzed. Al! there was to do was at least to try some of those things I "learned at the bee-meeting." Although they seemed to be good, they were not exactly like mine. After a trial they were better—and better for me.

Next year I had to attend again; not only that, but (so I heard) one of the best papers that had been before the convention at any time was read by that young fellow who could not be induced to say a word the last year. Even in the discussions a part was taken. And how easy it was!

Attend the bee-keepers' conventions whenever it is practical for you to so, is my advice. It will be good for you. If you have been once you'll go again, for it does not take long for a person to find out that it is of much value to him.



Our Sister Bee-Keepers

Conducted by EMMA M. WILSON, Marengo, Ill.

Very Old (?) English Bees!

Here is an amusing item from one of our English sisters in the *British Bee Journal*:

This is my first season of bee-keeping: I had 30 pounds of section honey from one colony, and a large swarm from the other; my third consists of two lots of driven bees, secured from an old country-woman in the autumn. Her daughter-in-law told me that she did not think that her mother's bees would be worth having, as she was quite sure they were too old to gather honey! "Why," she said, "they must be nearly 30 years old! She has kept them in the same place ever since she had them, and I am quite sure they must be nearly worn out—poor things. Why, last year they hardly gathered any honey at all, so I don't think it much use your trying them." Surely, Devonshire bees are very long lived.—"HEATHER," Sidmouth.

A New England Sister Looks On

DEAR MISS WILSON:—I have been absent from the Sisters' corner a long time, so long that you may have forgotten that I ever was there. However, I have kept that corner in sight all the time, and watched what the sisters were doing and saying. As a result of my observation I can see that women bee-keepers are doing more independent work than formerly; testing methods for themselves instead of depending entirely upon the experience of others.

I can assure them that I have learned some wonderful things about bees since I left my old home in New York State, nearly two years ago, when I came to New England to share Henry Alley's labors in queen-rearing. His work possesses a great fascination for me, as I watch each detail. I wish you could see him at work among the bees, with no protection except a large red-bandana handkerchief thrown over his head, under his hat, to protect the back of his neck. I really believe the bees get to know that bandana, and think it an immense flower, by the way they hover over it, but *seldom* under it.

I have watched this work from the time that an empty comb was given to a choice queen to fill with eggs till the beautiful golden queens were put into cages, and sent all over the world, ready to reproduce their kind in distant lands. The work looks easy and simple, and the results

seem almost magic; but let me tell you, that it has taken 40 years out of the best part of a man's life to perfect that system. It all looks simple because Nature's methods have been studied, and her work is always simple. No artificial cell-cups are used, but the bees draw out the cells in a natural way. I know of no more beautiful sight than a row of those queen-cells, perfectly formed, just ready to hatch those golden queens.

I would like to tell the sisters the whole process, as it has unfolded before my observation, if they would care to hear about it. Should any of them visit New England, we would be glad to have them visit the "Bay State Apiary."

MRS. HENRY ALLEY,

Essex Co., Mass.

(Formerly Mrs. C. A. Ball.)

Some Intemperate Bees

Sister J. W. Sagendorf, of Brookfield Center, Conn., sends the following clipping:

It would seem that it is among the humble-bees that temperance reform is most needed. The temptation is offered in the shape of honey supplied by certain composite plants of the thistle and century tribes. Whether this honey is specially and naturally intoxicating, or only occasionally so, is an open question; but Mr. J. L. Williams tells us that when the bees partake of it, they imitate the maudlin human very closely, in that they roll on their backs, kick their legs in the air, and show the utter helpless state of the chronic inebriate. As in ether drinking, however, the intoxication is very brief in its effects; but, sad to relate, the bees return to the honey after recovery with renewed zest, although Mr. Williams relates that one bee which had been confined for a night in a botanical box with some of the special flowers, showed signs of remorse on being set free. Possibly a surfeit over night acted, as usual, in inducing a decided, if transitory, fit of virtue next morning.

Upon reading the foregoing some will be inclined to think that Mr. Williams has himself been partaking of something not to be classed strictly among "soft drinks," and so has been "seeing things." Yet there is probably foundation for all he has said, and no very active imagination was probably needed to see all he saw. When the craze for the Chapman honey-plant was on, we had quite a patch of it. It was not an uncommon thing to see a number of bees sitting on the blossoms in a sort of stupid condition, perhaps remaining in that way over night. It looks as if the nectar obtained from those plants brought on that condition, and although these were hive-bees no doubt bumble-bees might be served the same way. These groggy bees, when touched, would throw their hind legs in the air as if to ward off attack, and if far enough gone it is not impossible they might roll over on their backs.



Mr. Hasty's Afterthoughts

The "Old Reliable" as seen through New and Unreliable Glasses.
By E. E. Hasty, Sta. B. Rural, Toledo, Ohio.

DAMPENING SECTIONS—CUTTING FOUNDATION.

Both the section-dampening plan and the foundation-cutting device, given by C. H. Harlan, on page 165, are likely to be splendid, if you can only make them work. As he makes them work it ought not to prove impossible to the rest of us. (Damp cellar for sections, and a saw-cut path for the end of the foundation-knife.)

GROWING A QUICK WIND-BREAK.

Anent Dr. Miller's answer about quick wind-breaks, on page 164, there's no doubt about cottonwood making the most growth; but seems to me young cottonwoods incline to grow too much like bare poles. For the first 5 years I kind o' guess one might do better. How would it do to set quite thickly poles 10 feet high of white willow or weeping willow? They take root and grow. I think soft maple will do the same thing if the ground is not too dry. Localities differ some as to which trees come to the front. Here wild cherry distances pretty much everything it grows beside. If one chose that, I think he would have to set rooted trees instead of poles. Doubtless cottonwoods could be branched out by cutting tops off—but don't they incline to *sulk* instead of growing their prettiest when you do that? Possi-

bly I'm slandering the cottonwood, after all, from seeing it grow among other brush. If perfectly in the open, and in a windy place, its style might be O. K. Poplars which used to be very abundant and rapid of growth here are now nearly extinct from some microbic disease. And the disease will be likely to visit you all when it gets a good ready.

BEES MOVING EGGS OR LARVÆ.

If E. W. Diefendorf gets the cold facts which he calls upon three eminent Canadians to give, I surmise that they will turn out to be cases of queens being reared where no queen could have laid an egg in the cell—that is proof that bees moved *something*, and they assumed that it was eggs rather than larvæ. So far as the moving is concerned, bees are probably capable enough of moving either one. Apparently the crucial point is that larvæ stay where they are put, while eggs will not. Page 165.

CAUCASIAN BEES.

The findings of Rev. Robert B. McCain about Caucasians are to be noted. He finds them good. But Italians, in the important matter of storing surplus, are somewhat better. Well, to live up to their reputation as non-stingers, and do fairly good work at storing, is all they need to do to hold an important place in certain locations. More than that I guess we must not expect of them. Page 181.

CAUSES OF HONEY FLOW AND SUPPRESSION.

The mysterious part of the varied causes of honey-flow and suppression calls pretty loudly for investigation. That the percent of sugar in bees varies greatly—also mysteriously—and to a certain extent parallel with the variation of the honey-flow, is a choice item to work into our going-to-come solution. Many thanks to Mr. H. S. Philbrook for it. His observation is that thunder-showers with great electrical violence and small precipitation are very bad for the nectar-secretion, and also bad for beet sweetness. I think we seldom have just such conditions here. I believe our usual thunder-showery weather for the most part favors the nectar-secretion, except so far as the rain washes the secretion away. Of course, we wouldn't expect that form of thunder shower that clears up with a north wind and much colder weather to be favorable. Page 184.

TWO QUEENS IN A HIVE.

We see. Everything has to be challenged. And now the mother-and-daughter theory of two queens in one hive catches it. Always two sisters, one of them a poor one, is the new theory proposed. That is, I suppose, the poor one hasn't vim enough about her to bring on a fight, and not enough of the scent of fertility to provoke much attention of any kind from the real queen of the hive. Guess the new theory is not so absurd as some of the new things we hear. At worst, we can thank Mr. Philbrook for setting us to thinking. Page 184.

SULPHUR FOR BEE PARALYSIS.

To have a powder-gun loaded with sulphur, and shoot all the entrances semi-occasionally, as Mr. Philbrook suggests, is not costly, and need not take much time. In localities where bee-paralysis often amounts to something serious—well, the keeper would thus soon come to have an idea whether it was worth while or whether he was merely making a monkey of himself. Page 185.



Conducted by MORLEY PETTIT, Villa Nova, Ont.

Relation of Ripeness of Honey to Granulation

Replying to an enquiry with reference to ripeness of honey to granulation, I have the following from Prof. Shutt:

MR. MORLEY PETTIT:—In normal, ripe honey it is claimed that the dextrose and levulose are present in approximately equal proportions. We have no Canadian data on this point. Of course, the runnings from honey that have granulated, either in the comb or subsequently, will contain an excess of levulose.

In well-ripened honey the water will be from, say 15.5 to 17.5 percent, and the dextrose and levulose together in the neighborhood of 80 percent.

Possibly honey more or less unripe will not granulate, owing to its larger proportion of water. Unfortunately, I can not find any statement as to this, and it is a matter which we have not yet investigated.

The proportion of water can be determined from the specific gravity, and if it could be shown that unripe honey with its larger percentage of water did not solidify, it might be possible to establish a relationship between specific gravity and granulation.

Yours truly,

FRANK T. SHUTT, Chemist.

How to "Sample" a Town With Honey

At the Ontario Convention many good points on "sampling" a town with honey by a house-to-house canvass were given. The Canadian Grocer has the following item along the same line:

THE ART OF SAMPLING.

It is remarkable the results which will accrue by judicious sampling of a given district.

First and foremost, the store-keeper must be certain of his article. It should be the best of its kind—no second-grade goods. The giving of a poor article will kill trade, not make it. Second, it should be neatly and attractively gotten up. The first impression is the lasting one. Given an attractive sample, the recipient expects a good thing—the first move in the direction of success.

Third, do not fail to have the name, address, and price clearly upon it.

Suppose you try this with your confectionery. A good corner of the street at the busiest time of the day; a neat, tasty confection handed to the passer-by by an equally neat and well-dressed boy with a well-worded notice of the fact in your usual advertisement space in the local journal, and you will welcome the result. A successful candy-dealer in the United States has built up a large business in this way.

Streaky Granulation in Honey—Losing Its Honey Flavor

Amid the confusion of information regarding the honey-bee and its products, it is singular how little there is about the treatment of honey after it has been harvested. It is true that honey, extracted after being sealed over, should require no treatment at all beyond straining, but if the moisture has not been evaporated, and the honey sealed over, some treatment is necessary.

The method advocated by some, of using the extractor to empty the upper tier of frames in doubled hives so frequently that the bees are unable at any time to build it up completely, must of necessity compel the apiarist to remove some honey which is unsealed, and therefore unripe. Under such circumstances half or more of the extracted honey will remain perfectly liquid and the remainder will become granulated, and if it is then put in bottles the combination of the two honeys is anything but satisfactory to the purchaser. The explanation of this fact is, after all, simple enough. Honey is composed of dextrose and levulose in certain proportions, and water to the extent of about 25 percent; if the former predominates it granulates, and if the levulose it remains liquid. The only method by which this state of things can be avoided is by allowing the whole of the honey to remain on the hive until properly ripened, or keep the honey in a warm place (about 100 degrees) until the excessive moisture has been gotten rid of. This can be accomplished and the virgin delicacy not be impaired.

If honey is heated to the boiling point it will lose its flavor, but as stored by the bees it is seldom subjected to a temperature higher than 100 degrees, which is sufficient to evaporate the moisture from the crudest honey within a few days. A colony of bees will build, evaporate, and seal over a 30-pound super in a week to a fortnight in the height of the season, but it is possible that the bees assist in reducing the moisture by extracting the watery portion of the honey for brood-rearing and for their own use. The most exacting taste will not be able to discriminate between the granular and non-granular honey, but the expert can tell by the specific gravity whether it will eventually granulate satisfactorily. Nothing is more worthy of attention by bee-keepers than the placing of their product before the public in the best manner. To be able to improve, refine, and heighten its qualities is to earn the gratitude of all the fraternity.—Weekly Mail and Empire.

Amerikanische Bienenzucht, by Hans Buschbauer, is a bee-keeper's hand-book of 138 pages, which is just what our German friends will want. It is fully illustrated, and neatly bound in cloth. Price, postpaid, \$1.00; or with the American Bee Journal one year—both for \$1.75. Address all orders to this office.



Doctor Miller's Question Box

Send questions either to the office of the American Bee Journal, or to Dr. C. C. MILLER, Marengo, Ill.

Dr. Miller does not answer Questions by mail.

Mice as Honey-Eaters

There seems a difference of opinion between Messrs. Doolittle and Hasty as to mice eating honey. Please tell us what you think about it.

ANSWER.—If I may be allowed to paraphrase, I will say that a certain gentleman whom I hold in high esteem is usually accurate, but I am unreasonable enough to entertain some doubts whether he is perfectly sound on mouse diet.

I wish Mr. Hasty would try this experiment: In a place where mice are wont to congregate, let him place food in abundance, but nothing sweet except a new comb containing a little honey, none of it sealed, and none of the cells well filled, and then let him report to us whether the mice have torn down any of the cells to get at the honey, and whether they have torn down for mischief any of the cells that do not contain honey.

An Injured Finger—Ripening Basswood Honey

1. Last November I got my finger hurt so it was inflamed. I worked a few days after this with the bees, and they stung my hands a great deal. Before long the finger commenced to fester. The doctor lanced it, and did so almost every other day for 40 days, as it seemed to be honey-combed through and through, and each lancing only opened a small pocket. By this time I got too weak to walk. The doctors then cut it off above the first joint, and still the infection continued, and it had to be lanced a good many times after this. I still have it done up, but the inflammation is about gone, and I think it is about well—only one little spot. Now the four finger joints seem to be larger and stiff next to the hand. By getting stung on this finger, or hand, will it be more apt to poison it again?

2. I am liable to have about 2 tons of basswood honey. How would it do to extract it a little green, put it into large barrels with one head out, and leave it in the honey-house to ripen? Do you think this would do about as well as to leave it on the hives? IOWA.

ANSWERS.—1. I don't think the stings were the cause of the trouble, but in the condition of that hand irritation from any source whatever is to be avoided, and I would be to no little trouble to avoid stings on it. I don't like gloves at all, but in your case I think I should wear at least one glove when working with bees.

2. Don't try it. It will be very likely to result in a lot of honey not fit to put upon the market. Unless you have special facilities for ripening honey, such as no one in your climate is likely to have, don't extract honey till it is well ripened. You can easily spoil your market by one lot of unfit honey, and it will take years to overcome the harm.

Wax-Worms and Combs—Extracted-Honey Retail Packages and for Storage

1. How early in spring will the wax-worm begin its destructive work on combs stored in the honey-house?

2. How can I keep the frames from being injured? Last year I hung some on racks in the light where I occasionally looked at them, but after catching one here and one there I soon had the comb broken up more or less.

3. What would you advise me to use to store extracted honey in? I strain it right from the extractor. Last fall I put it immediately in retail packages. This year I will probably get more honey. I expect to put some in retail packages (pound jars) as soon as extracted, to supply my local trade. I may also sell some in larger packages. Now, what should one have on hand in the extracting-house, where I store it, to facilitate the handling of say 1500 to 2000 pounds of honey? and would the method you give be all right for larger quantities?

4. Is it necessary that honey be kept in an air-tight receptacle?

5. Is tin objectionable as a retail package for storing?

PENNSYLVANIA.

ANSWERS.—1. Something depends upon the character of the honey-house. It needs considerable warmth for the favorable development of the miscreants, and if your honey-house is a warm place you may expect them to flourish by the first of May. Otherwise not till the last of the month. In a cool cellar there will be little trouble before the combs are needed for swarms. Of course, if the weather is warm their work will be earlier than when there is a cool spring.

2. Keep the combs in a cool place, as in a cellar, till needed for swarms. Still better, as soon as colonies become strong put under each strong colony a story of combs to take care of. You may keep them almost anywhere if you look them over every 10 days, and when

you find any signs of their work take Miss Wilson's plan, and with an oil-can squirt a little gasoline upon them.

3. Nothing is better than glass or stoneware. Sixty-pound tin cans would probably answer your purpose.

4. No; although too long exposure allows escape of aroma.

5. Not if the tin is of good quality.

Italianizing Black Bees

1. On page 236 is a question about Italianizing black bees by giving them brood from Italian bees; but how about the mating of the queens—wouldn't they be mated from the black drones, and not be of pure blood?

2. If this would work all right, how early could this be done?

3. If early in the season will the bees rear drones to mate these queens? IOWA.

ANSWERS.—1. As the mating of queens takes place outside the hive, a virgin reared from the best Italian stock is likely to meet a black drone so long as blacks are greatly in excess. But by breeding only from those which do succeed in being purely mated, and occasionally buying a pure queen if necessary, one may hope in time to work out black blood to a large extent. But it is by no means an easy thing to keep pure Italian stock so long as impure blood is within 2 miles of you.

2 and 3. Unless you are an expert you will be likely to fall in securing either good queens or drones much before the time when bees naturally begin to make preparations for swarming; and when you become an expert you are not likely to try it. If you want to take some steps to have Italian virgins meet only Italian drones, instead of trying to have them earlier in the spring than other drones, you might try to have them fly later in the day than black drones are flying, by keeping in the cellar colonies or nuclei with the proper virgins and drones, and bringing them out in the afternoon after black drones have ceased to fly. A little thin feed will start them to flying.

Shallow Hives—Uniting Weak Colonies

1. I am making some new hives with shallow frames, 5½ inches. I intend to use 2 shallow supers for a brood-chamber, 8 or 10 frames in each.

2. Will shallow frames cause less drone-rearing if I use full sheets of worker foundation?

3. I have some big hives with 18 frames in the brood-chamber. Are they as good as 8 or 10 frame hives for extracted honey?

4. I have some weak colonies. Would I do better to unite them, making one out of two? Would I have to kill the queen in one before uniting? WISCONSIN.

ANSWERS.—1. The majority of bee-keepers seem to prefer the deeper frames, but there is more in the management than in the frames.

2. The depth of the frame will make no difference as to drone-rearing. With full sheets of worker-comb you ought to have little trouble with drones in either case.

3. You can probably get as much honey from one as the other. The smaller hives are more convenient to move; but that may not be important in your case. On the whole, while it may be well to use hives with 18 Langstroth frames, if you have them already on hand, until you find them preferable in your hands it may not be advisable to make more of them.

4. If each colony has a good queen it may be best to try to keep them separate. Neither should you judge of the value of a queen by what she does in a very weak colony. The best queen in the world will not do the best work with only a small number of bees. You might try the plan of putting a weak colony over a strong one, with a queen-excluder between. If you unite 2 colonies it is not necessary to kill one of the queens.

Pure-Blood Italians—Rearing Queens

1. I purchased an untested queen last fall of 5-banded stock, and only the workers show 3 full yellow bands. Is she a full-blooded Italian queen?

2. Will a full-blooded Italian queen always produce yellow queens, or will some be black?

3. Say a queen of 5-banded stock would be mated with a black drone, what percent of Italian blood would her bees contain? and how many yellow bands will they have?

4. How many generations would it take, by having an Italian queen mated with a black drone every time, until there would be more black blood than Italian?

5. Would fresh-laid eggs be all right for rearing queens, by putting them in compressed cups without royal jelly? or must larvae be hatched before being moved or used? OHIO.

ANSWERS.—1. I don't know. It used to be the rule that if all the worker-bees showed 3 yellow bands the stock was counted pure Italian, and I suppose that is still the test; but since the evolution of 5-banded bees I'm not sure the rule will hold. Suppose we have 5-banded, and a virgin of that stock meets a hybrid drone. It is easy to conceive that the result might be 3-banded workers, with some 4-banded and some 5-banded, and yet there would be some black blood present. The possibility, if not the probability, is that your queen is not purely mated.

2. No; some of the purely-imported Italian queens are quite dark,

and the royal progeny of a pure Italian queen are likely to show no little variation in color. You can not judge by the looks of an Italian queen, but from her worker progeny.

3. If the mother is pure Italian, and the father pure black, there will be just half black blood in the queen or worker offspring, but the drones will be pure Italian. There will be no uniformity as to the number of bands on the workers; some of them may have 5, and some may have none.

4. I suppose you mean that you would each time use a pure black drone to mate with the cross already obtained. In that case, the first cross would be half black, and the second cross three-fourths black.

5. I don't suppose you would succeed by moving eggs. I don't remember hearing that any one ever did.

Buying Bees in the Spring

1. When would you advise to buy bees?
2. What would you call a good colony?
3. What would you pay for a mixed colony, but good in every other way?

ANSWERS.—1. Rather late in spring, say about the beginning of fruit-bloom, is a very good time. The troubles resulting from wintering are likely to be over then, with nothing to hinder a prosperous career.

2. A colony that at that time has brood in 5 frames, Langstroth size ($17\frac{1}{2} \times 9\frac{1}{4}$), each frame being $\frac{3}{4}$ or more filled with brood, would be a fairly good colony; with 6 or 7 brood it would be a very good colony.

3. There is no rule about prices. They may be twice as much in one place as in another, varying from \$4 or less to \$8 or more.

Ventilation Space Below Brood-Frames When Moving Bees

You are familiar with the Holtermann portico and screen for moving bees, but to attach such an apparatus to all our hives would destroy the interchangeability of extracting supers and brood-chambers, besides several other disadvantages. My idea is to use your deep bottom-boards—say $2\frac{1}{4}$ inches deep instead of the usual 2 inches—then when necessary to move bees in any kind of weather, just pull out the false bottom and insert a screen-covered rim, say $12 \times 19\frac{1}{2}$, into the entrance, giving then a clustering space of at least 2 inches under the frames, and wire-cloth surface for ventilation about $10\frac{1}{2} \times 17\frac{1}{2}$ —greater than the ventilating surface of the screen used with Holtermann's portico.

1. How deep do you think the bottom-board should be to be used as above?

2. As all the air must come in at the front of the entrance, and mostly under the screen, in the $\frac{1}{2}$ -inch space under the screen above the floor, will the ventilation be sufficient for the strongest colonies?

3. What do you think of the idea? Any improvements?

IDAHO.

ANSWERS.—1. It seems to me $2\frac{1}{4}$ would be enough, and possibly 2, but you'll have to wait and try it in red-hot weather before you can be sure.

2. Not sure about it, but it seems to me $\frac{3}{4}$ inch under the screen would be better, even at the expense of less clustering room between screen and bottom-bars.

3. If I had originated the idea I should say it was just the thing. Seeing it's your baby, I'll say you can't tell how it will work till you try it. How would it do to have the screen within $\frac{1}{2}$ inch of the floor at the back end, and within 1 inch of the floor at the entrance? Not so easy to make a close fit, but it would put the bees at the back end more on a par with those at the front end as to chance for pure air. In fact, wouldn't less than $\frac{1}{2}$ inch do at the back end if the air that reached that point was fresh? I think you'll see what I'm getting at, that if the space is the same throughout, and there's any suffering for lack of fresh air, the bees at the back end would be the ones to suffer most.

Old Combs for Beeswax—Making Sections at Home—Changing Queens—Number of Comb-Honey Supers Per Colony—Equalizing Brood Among Colonies

1. Are old combs with dead bees in them fit for beeswax? If so, how is the best way to get it out of them? I have no extractor.

2. As the price of sections is very high, and section lumber very cheap in my neighborhood, do you think it would pay me to buy a machine to make sections?

3. I clip my queens and hive the swarms on the old stand. Would it do to change queens when they swarm, by giving them a queen-cell or a young queen just hatched? Would they store as much honey by changing the queen?

4. I run my apiary for comb honey, using the 8-frame dovetailed hive with T-supers. How many supers should I have for each hive?

5. On April 22, 1905, my colonies had 3 to 7 frames of brood each. Would it pay to take from and give to until each colony had the same amount of brood?

IOWA.

ANSWERS.—1. Yes, a large part of the wax of commerce is obtained from hives in which bees died in winter. One way to get the wax out of a small quantity of combs is to use a dripping-pan. Split open one corner. Put the pan in the oven of a cook-stove, the split

end projecting outside the oven-door, and the diagonally opposite corner of the pan slightly raised. Set any vessel containing a little water under the outer corner to catch the dripping wax. But this will not get the wax out as clear as a wax-press.

2. No, there is probably not a man in the country that makes sections only for his own use. A complete outfit of section machinery would cost several thousand dollars, probably.

3. No, when a swarm is hived it doesn't take a great deal to make the bees desert their new habitation, and if their old queen were taken away they would not be satisfied with a cell or a virgin, but would return to their old home.

4. That depends. Decide as nearly as you can the average number of supers your colonies will fill in the very best season. That's the number you need, together with one extra super for each hive. For instance, if in the very best season the number of filled supers averages 5 for each hive, then you should have 6 ready. You understand that it will be a rare thing for you to need so many, but an old saw runs, "It's better to be ready and not go than to go and not be ready;" and the extra supers not needed will be all right for another year.

5. It's not a bad plan. But let me give you a hint: Don't take from the strongest and give to the weakest, but give to those not quite strong enough. Take a frame from those having 6 or 7 frames, reducing them to 5; that is, from a colony having 6 frames you will take one frame, and from a colony having 7 frames you will take 2 frames of brood. Now give one or two frames to each colony having only 4 frames. When these are brought up, then give 2 or 3 frames to each colony having only 3.

Several Eggs in a Cell—Preventing Bees Hanging Out—Keeping Queens

1. What causes a queen to lay a number of eggs in each cell? This was done by the queen in the colony that died, and they had mostly drone-comb.

2. What can be done to stop bees from hanging out?

3. What is the best way to keep queens taken from colonies?

NEBRASKA.

ANSWERS.—1. I don't know. It is a very rare thing; and generally a queen that does that sort of thing is no good; but I have known a queen to do it for a time, and then behave herself with entire propriety during the rest of her life. It is, however, not such a rare thing to find more than one egg in a cell; but in nearly every case such eggs are not laid by a queen, but by laying workers. Unless you know positively that a queen laid the eggs in the case you mention, I should suspect laying workers.

2. Give them abundance of room, shade and ventilation. Sometimes, however, they are hanging out because there is nothing to be done in the field, and in that case they are not to blame for hanging out.

3. In a nucleus. For a few days, however, they may be kept caged in a colony that has its own queen, and some good-natured bees are generally willing to feed them. To make entirely sure against starvation, a provisioned queen-cage may be used.

Stretching Comb Foundation—Miller Frame

1. How do you make $7\frac{1}{4}$ -inch wide brood foundation reach to the saw-kerf in the top of the frame and between the two pieces of the bottom-bar? The total distance $8\frac{1}{4}$.

2. Where can I get the Miller frame? I have been using the Hoffman, but don't like it any better than you do.

KANSAS.

ANSWERS.—1. You mustn't ask such hard questions. I don't know of any way to make comb foundation longer except by stretching it, and that isn't a good way. My foundation is made half an inch more than the space between the top and the bottom-bars; that makes the foundation $8\frac{1}{4}$ inches. You probably have foundation $7\frac{1}{4}$, and want to know how you can use it. I'll tell you: Cut some of the sheets into strips $\frac{1}{4}$ of an inch wide. Put a full sheet into the upper part of the frame, and a $\frac{1}{4}$ strip into the lower part. It may not be easy to make an exact fit where the two parts come together, but it doesn't matter if they are $\frac{1}{8}$ or $\frac{1}{4}$ of an inch apart. The bees will make it all right.

2. From the G. B. Lewis Co., Watertown, Wis., and probably any manufacturer will make them to order.

Honey as a Health-Food.—This is a 16-page honey-pamphlet intended to help increase the demand for honey. The first part of it contains a short article on "Honey as Food," written by Dr. C. C. Miller. It tells where to keep honey, how to liquefy it, etc. The last part is devoted to "Honey-Cooking Recipes" and "Remedies Using Honey." It should be widely circulated by those selling honey. The more the people are educated on the value and uses of honey, the more honey they will buy.

Prices, prepaid—Sample copy for a two-cent stamp; 50 copies for 70 cts.; 100 for \$1.25; 250 for \$2.25; 500 for \$4.00; or 1,000 for \$7.50. Your business card printed free at the bottom of front page on all orders for 100 or more copies. Send all orders to the office of the American Bee Journal.

See Langstroth Book Offer on another page of this copy of the American Bee Journal.

Reports and Experiences

White Clover All Right.

I can not do without the American Bee Journal while I keep bees. I have 60 colonies in good condition. They had a cleansing flight to-day—the first since March 8. We have had very stormy, wintry weather the past two weeks. The prospects for honey are favorable so far, as the white clover—our main honey-plant—is all right.

L. W. Elmore.

Fairfield, Iowa, March 26.

Bees Wintered Well So Far.

Bees are wintering well so far. I hope we will have a good year for honey. Last year we had only a quarter of a crop. I put 102 colonies in the cellar last fall. I am now looking for warmer weather very soon so as to put them out.

C. Eggenberger.

Thellman, Minn., March 26.

Honey Scarce Last Season.

Last fall I packed 6 colonies of bees snug and tight for winter. The honey was scarce last season, so I fed 80 pounds of sugar and then they were in fair condition to winter, excepting one colony. I lost this one, doubled up two this spring, and I now have 4 good colonies. I have had bees 2 years and have gotten only 20 pounds of honey. This does not discourage me, as many have lost all their bees this winter.

Cecil H. Neuman.

Wymore, Neb., March 5.

Season Earlier Than Usual.

Our season is earlier than usual. The fruit-trees are just in bloom. Bees are in fine condition, and swarming will soon be the order of the day.

J. W. K. Shaw & Co.

Loreauville, La., March 14.

Not Expecting a Great Crop.

We can report a very fine rain, 4 or 5 inches, just now. If we get as much toward the last of March, we shall get some honey this season, unless it turns very dry from now until that rain of the last of March. But even without it, a rain of 2 inches in the middle of April would make a honey-yield. But I have not known 2 honey crops in succession since I have been in California. The prospects hang by a thread, as it were.

C. W. Dayton.

Chatsworth, Calif., Feb. 15.

Keeping Bees on Shares.

I have been in the bee-business for 3 years. A man asked permission 3 years ago to set his bees on my place on shares. I was to get half the swarms and half the honey, but had to furnish my own hives. We had at that time 26 colonies, but did not have very good luck that year, as the man had some enemies that poisoned the bees. It must have been paris-green that was used, as handfuls could be scooped up in front of each hive. In the fall when we divided I got 8 colonies, but little or no honey. My trouble in keeping bees is, they want to swarm too much, and the hives are so high in price, although I got mine second-hand for \$2.25 for the hive and 2 supers.

The first prime swarms I hive, but when the swarms get smaller I double them up with a weak and late swarm. Of course there is some trouble at first, but they soon quiet down. I find the dead queen in front of the hive in the morning, which I expect. I have had some swarms come out with 2 and 3 queens, and have had swarms come out together, and they have done well.

Last year I cut out all the queen-cells, which I think I ought not to have done, for I soon found I had a good many queenless colonies, which dwindled away and died. I gave them combs of brood, thinking they would rear a queen, but it did not help.

I have now 35 colonies in good condition. Last year they averaged 2 supers of honey to the hive. I am a farmer by occupation, and it takes most of my time to attend to other business, but I love to work with bees. I never put on veil or gloves, but go right amongst the bees. My family are also good bee-keepers. Noack Soderlund.

Tudor, Calif., Feb. 15.

EVERYBODY WANTS



PUBLISHED WEEKLY FOR THE BREEDER AND FARMER.
Recognized authority on Breeding, Feeding, Management and the Improved Breeds of Stock.

Special Departments for

Draft and Coach Horses,

The Beef and Dairy Breeds of Cattle,

Sheep, Swine, Poultry and the Dairy.

By able Live Stock Writers and Breeders, with the best from Home and Foreign papers of the world's progress in Live Stock Husbandry.

Our Live Stock Market Report is unequalled.

Handsomely printed and illustrated.

No Stock Farmer can afford to do without it.

Published weekly. Subscription price only \$1.00.

Agents wanted in every county.

Write for sample copy. Address

THE LIVE STOCK JOURNAL

394 E. 55TH ST. CHICAGO

This is the season when the poultry-men's interest centers in his incubators. With the approach of spring he anticipates the advent of a large number of fluffy little balls of down, which are later to be developed into the profits he must make in order to carry on his business successfully. Any failure on the part of the machine at this critical juncture means serious loss, not only of money invested in eggs,

but time wasted in producing a poor hatch—not that hatching is such a difficult matter, because there are many devices which will hatch chickens, but the point to be considered is to get the machine which will unquestionably hatch the largest number of strong, vigorous chicks, with the least expenditure of time, labor and money. As a standard of excellence in these respects, the Reliable Incubator will meet every requirement. The system of heating and ventilation employed in the 1906 Reliable so perfectly controls the temperature and moisture that, providing the eggs used are of the proper fertility, results can be guaranteed almost to a certainty. While the system employed embraces the most advanced and practical ideas in the principles of incubation, it is extremely simple in operation, requiring little care to run the machine, and relieving the operator of all unnecessary labor. No artificial moisture is required, and as the lamp, burners and chimneys are made entirely of metal, and so constructed as to be perfectly safe from explosion or catching fire, this machine is an ideal one for the poultry-raiser. The many years which the Reliable Incubator & Brooder Co. have been before the public have established their reputation for producing a most excellent line of poultry appliances. The machines they offer the present season are fully up to their previous standard of excellence, besides embodying further improvements. A complete description of their incubators and brooders will be found in their catalog, which they will be pleased to mail free of cost to any one who will address The Reliable Incubator & Brooder Co., Quincy, Ill., requesting a copy of same. When writing kindly mention the American Bee Journal.

WANTED

Young man to take care of an apiary of 300 colonies, and carefully pack bee-supplies for shipping. **TRESTER SUPPLY CO.**
941f LINCOLN, NEB.



Widen The Circle

There is no better way for the farmer to widen the circle of his influence than to join with his neighbors in building a telephone line. It extends the neighborhood circle and enables each one to receive advantages that cannot be had in any other way. The cost is meager compared with the benefits of a good telephone line, and progressive farmers, who are awake to their own interests, are building many such lines.

Stromberg-Carlson Telephones

are used on nearly all farmers' lines because they have been found to be the most suitable telephones for that purpose. It don't pay to experiment when you can get Stromberg-Carlson Telephones and be sure of good service. Start off with the best and your line will always work satisfactorily. You will also avoid the expense of changing instruments in a few months. Book 80 I, "How the Telephone Helps the Farmer," tells how to organize, build, and operate a farmer's line. It's free, and every farmer should have a copy.

Address
Nearest
Office

Write
For Book
Today

STROMBERG-CARLSON TELEPHONE MFG. CO.
ROCHESTER, N. Y.

CHICAGO, ILL.

Seed-Time and Harvest

is an illustrated Monthly Journal for country homes. It is known everywhere as the Great "Home Industry" Monthly. It is a "Periodical with a Purpose." Its mission is "Teach Independence Through Home Employment." Only 25 cents per year; none free.

Seed-Time & Harvest Pub. Co.
Dept. 208, Scranton, Pa.

45Ctf Please mention the Bee Journal.



CACTUS CULTURE

for amateurs, 80 pages profusely illust. and describing 500 varieties of rarest Cacti and Succulents. Just pub. price 25 cents. Living Rock Cactus, 25c. Old Man Cactus (genuine) 50c. E. Muller (like cut) 10c. 10 nice Cacti, \$1.00, postpaid. 40-page catalogue of 500 var. and a nice little sample Cactus, 10c. Circular free. The Callander Cactus Co., Dept. 43, Springfield, Ohio.

BARNES' FOOT POWER MACHINERY



Read what J. I. PARENT, of Charlton, N. Y., says: "We cut with one of your Combined Machines, last winter—50 chaff hives with 7-in. cap, 100 honey racks, 500 brood frames, 2,000 honey boxes, and a great deal of other work. This winter we have double the amount of bee-hives, etc., to make, and we expect to do it with this Saw. It will do all you say it will." Catalog and price-list free.

Address, W. F. & JOHN BARNES, 995 Ruby St., Rockford, Ill.
Mention Bee Journal when writing.

Successful Poultry Journal

FRANK HECK, Editor.

Subscription Price 50 cents per Year.
Write for Advertising Rates.

The most prominent and successful, practical poultrymen write for the Successful Poultry Journal, and tell how they build their houses, mate their fowls, manage their incubators, feed both young and old—and, in fact, tell how they succeed and make money. Send for sample copy.

SUCCESSFUL POULTRY JOURNAL

1Ctf 335 Dearborn St., CHICAGO, ILL.

PETS

If you are interested in Pigeons, Rabbits, Cavies, Dogs, Cats, Birds or Pets of any kind, you should send for a free sample of **PET STOCK**. It's the Best Publication of its kind in America. Has a national circulation, and it's only 50c a year. Address, **PET STOCK**, 40Ctf Box 20, YORK, PA.

Here is a Winner

The Modern Farmer and Busy Bee. \$.50
Gleanings in Bee-Culture. 1.00
The ABC of Bee-Culture, postpaid. 1.20

For a Short Time Only,
all three, \$1.70

DO NOT SEND PRIVATE CHECKS

You can substitute either Pearson's, Cosmopolitan, American Boy, or Western Fruit-Grower for Gleanings, or Langstroth for A B C, if you wish.

Act quickly, and address

THE MODERN FARMER,
ST. JOSEPH, MO.

Sections :- Sections :- Sections

—AT—

Anti-Trust Prices

\$3.25 for No. 1's

In Lots of 1,000
and up

\$2.25 for No. 2's

Quality and Quantity Guaranteed

And the price—CAN IT BE BEAT?
Order Now.

Columbia Manufacturing Co.

Antigo, Wisconsin.

HEAD OFFICE—APPLETON, WIS.

In Its Twenty-eighth Year

The Rural Californian

6 Months 25c.

A large monthly magazine devoted to Agricultural, Horticultural and rural pursuits, showing the wonderful development of the Pacific Coast. Beautifully illustrated, well edited and artistically printed on fine book paper. An encyclopedia of information for colonists. Address,

THE RURAL CALIFORNIAN

1Ctf Rooms 6 and 7 Temple Block,
LOS ANGELES, CALIF.

Bees

A 40-page Catalog free
The latest work on **BEE-SUPPLEN**. Hives, Fixtures, Etc. Italian Bees and Queens. If interested in

bees, do not fail to write us.

John Nebel & Son Supply Co., High Hill, Mo.

6Ctf Please mention the Bee Journal.

WE SELL ROOT'S GOODS IN MICHIGAN
Let us quote you prices on Sections, Hives, Foundation, etc., as we can save you time and freight. Beeswax Wanted for Cash.

M. H. HUNT & SON,
BELL BRANCH, WAYNE CO., MICH

CONVENTION NOTICE.

Connecticut.—The 15th annual meeting of the Connecticut Bee-Keepers' Association will be held in the Capitol, Hartford, Room 50, Wednesday, April 11, 1906, at 10:30 a.m. All bee-keepers should make an extra effort to attend this meeting. Try to bring a friend also. Topics for discussion: The best method for putting starters in sections. Your best way to prevent swarming. Swarming devices, pro and con. Large and small hives compared. What is the best way to increase? Best use to make of second swarms. How did your bees winter? How many colonies have you? What do you do with sections after removing them from the hive? Handling the divisible brood-chamber vs. single frames. How do you manage the colony after the first swarm has left? How do you ripen or thicken extracted honey? Can new combs be made out of old ones by cutting them to one-half inch thick or less? and would they be as good as new ones?

Please bring something for the exhibition table, or a question for the question-box.

Mrs. E. E. SMITH, Sec.
Watertown, Conn.

GROCERIES

AT WHOLESALE PRICES

—FREIGHT PAID—

What do your groceries cost you a year? Will you buy them of us if we can prove that we will save you from 10 per cent to 20 per cent and pay the freight? That certainly is an amount worth saving; it is worth the trouble of asking for the proof. Get our large Grocery List and compare our prices with what you have been paying. Then put us to a greater test—send us a trial order and compare the goods and the prices. If we do not save you big money, send the goods back at our expense. The grocery bill is the biggest part of the family expenses. We will cut it almost in the middle and guarantee everything we sell. We can do this because we buy in immense quantities—carloads and trainloads—and we give you the benefit of our ability to buy cheap; in fact we can sell to you at just about the figure your local dealer would have to pay. We save you his profit and the freight besides.

To save still another 10 per cent, become a member of the Co-operative Society of the National Supply Co. We'll tell you how to get this extra 10 per cent discount, if you will write for full information. An easy way to make money.

If you want to save money get our catalogue and learn just how cheap you can buy groceries from us. Catalogue is ready and lists everything in the grocery line. We send it free.

Co-operative Society of the National Supply Co., Lansing, Mich. and Chicago, Ill.

FREE This catalogue will save you money on your grocery supplies.



GREAT SALE OF Hives, Sections, Etc.

To reduce my stock I will sell No. 1 White Polished Sections at \$3.90; No. 2, \$3.40—all sizes; plain, 25c less per 1000. Best White Pine Dovetail Hives, 8-frame, 1½-story, \$1.30; 10-frame, \$1.45. Great reduction in Smokers, Foundation, and all Apian Supplies. 24-lb. Shipping Cases, very nice, 13c; Quart Berry Baskets, \$2.75 per 1000. Send for free Catalog.

W. D. SOPER, R.F.D. 3, JACKSON, MICH.
14Et4 Please mention the Bee Journal.

Etablissement d'apiculture Mont-Jovet

ALBERTVILLE, FRANCE.
Official purveyor of the U.S. Government. We supply also imported Caucasian Queens. Safe arrival guaranteed.

CAUCASIAN QUEENS.....	1	6	12
Select Untested Queens.....	\$1.00	\$11.00	\$20.00
Select Tested Queens.....	2.50	14.00	25.00
ITALIAN QUEENS.....	1	6	12
Select Untested Queens.....	\$1.00	\$5.50	\$10.00
Select Tested Queens.....	1.50	7.00	12.50

Full rates on application. English correspondence.

14C4t Please mention the Bee Journal.

Bees, Queens and Bee-Supplies

We manufacture standard dovetailed bee-hives and supplies, cheaper than you ever bought before. Our Queens and Bees stand at the head in quality. Untested, 75c each; \$4.25 for 6, or \$8 per doz. Tested, \$1.25 each; \$12 per doz. Select Tested, \$1.50. Special prices to dealers in large lots on application. State Agents for Dittmer's Foundation. Catalog free.

THE BEE & HONEY COMPANY

(WILL ATCHLEY, Prop.)

Beeville, Bee Co., Texas.

Mention Bee Journal when writing.

BINGHAM
• Original
Direct Draft
GRAY
Bee Smokers



Tin 4-in. Sm. & Engine 3½-inch 3-inch 2½-inch 2-inch Wonder
 Sent on receipt of price per mail.
T. W. BINGHAM FARWELL, MICH.

Never Go Out
And last from 5 to 21 years

OTISVILLE, PA., Jan. 15, 1904.

Dear Sir:—I have tried almost everything in the smoker line; 3 in the last 3 years. In short if I want any more smokers your new style is good enough for me. I thank the editor of Review for what he said of it. Those remarks induced me to get mine. **FRED FODNER.**

Mention Bee Journal when writing.

For Queens

Send to
JOHN W. PHARR
Berclair, Tex.

He will furnish at the same prices as last year: Tested, \$1; Untested, 75c; 5 for \$3.25; 10 for \$6; 15 for \$8.25; 25 for \$12.50; 100 for \$45. He breeds Goldens, Carniolans, and 3-Band Italians. Also 1, 2, and 3 frame Nuclei and full colonies. Prices given on application. Pharr pays the freight, and guarantees satisfaction on all Queens. To do justice and judgment is more acceptable with the Lord than sacrifice.—(Prov. 8:21.) 5Atf

Mention Bee Journal when writing.



Everything for the Bee Keeper

will be found in our Illustrated Catalogue No. 40. It contains a full line of Hives, Supers, Followers, Sections, Section Holders, Frames, Extractors, Smokers, etc. All these and many other essentials are manufactured by us. Everything is guaranteed to be right and of best quality. Our prices are so reasonable that any bee keeper may afford the best supplies.

We cannot tell you here of all the good things in this book.

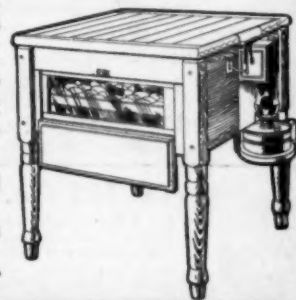
Better send for a copy today. We mail it free, together with a copy of the **Progressive Bee Keeper**, a splendid monthly publication devoted to bee interests. It will help you start right and keep you right after you are started. It is invaluable as an aid to every bee keeper. Ask for the paper and the book.

We Sell the Best Incubators and Brooders.

Delivered at your station, prices the lowest. Write us at once and save money. Address

LEAHY MFG. CO., 10 Talmage St., Higginsville, Mo.

Branches at Omaha, Neb. and East St. Louis, Ill.



Everything for the Apiary
Wholesale Agents for G. B. Lewis Co.
Dadant's Foundation

BUY NOW—TAKE ADVANTAGE OF THE DISCOUNT.
SEND US YOUR ORDERS.

LOUIS HANSSEN'S SONS
DAVENPORT, IOWA

Michigan Distributors

—FOR—

G. B. Lewis Co's BEEWARE
Dadant's Foundation

WITH an enormous stock, and the best shipping point in Michigan, we are in a position to give you the very best service.

SPECIAL.—A quantity of Dovetail and Wisconsin Hives, slightly discolored by water, in packages of 5 at \$1.25 per hive for 1½-story 8 frame; 10-frame, \$1.40 per hive. Satisfaction guaranteed.

BEEWAX WANTED
A. G. WOODMAN CO.,
Grand Rapids, Mich.



Advanced Bee-Veil. Cord arrangement, absolutely bee-proof, best on earth. Made of imported French tulle veiling. Cotton, with silk face, 50 cents, postpaid. 49C7t



The Lion Engine

is sold direct from
FACTORY to USER

Acting on the theory that "testing is proving" we will send any responsible person, on certain very easy conditions, one of our three h. p. gas or gasoline engines on 10 days test trial. This engine is no experiment, but has been proved by actual use to do any work (where the rated amount of power is required) in the most practical, reliable, safe and economical way. This engine is of the four cycle type. While the engine is up to normal speed the exhaust valve is held open, allowing free circulation of fresh air in the cylinder. The igniter and intake valve are at rest, therefore are not using gasoline or the batteries.

Our igniter and mixer are of the most simple and reliable character. The gasoline is always properly vaporized and the igniter point never comes together unless a spark is required. The fly ball type of governor is used, which automatically controls the exhaust, igniter and the gasoline; it also allows the speed to be changed from 100 to 600 revolutions per minute while the engine is in motion—a very superior feature.

LION GAS OR GASOLINE ENGINES
are simple in construction and
EASY TO OPERATE

They are used for all purposes where power is required for operating private electric-lighting plants, small factories, printing offices; farm machinery, such as cream separators, feed-grinders, corn shellers, wood-sawing machines, etc., and for a thousand and one other purposes.

WRITE US A LETTER LIKE THIS:

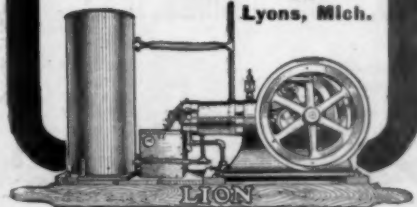
LYONS ENGINE CO.,
Lyons, Mich.

Gentlemen: I am about to purchase a gas or gasoline engine for _____ purposes and wish you to send me full particulars about your approval offer as advertised in American Bee Journal.

Yours very truly,
Name _____
Town _____
State _____
Street No. or P. O. Box _____
R. F. D. _____

When writing, please state definitely for what purpose you wish to use this engine and whether gas or gasoline is to be used for fuel. This information is very important to us. Please remember we send the engine, not the engine agent.

LYONS ENGINE CO.
Lyons, Mich.



Have You Passed the Experimental Stage?

Most bee-keepers have been convinced that when time and material are figured, it pays to buy hives, and the best is not only as cheap, but—

The Best Is the Cheapest!

The Elgin Hive excels in many ways—no nails to drive—no dovetails—can be taken apart at any time.

Many are using them. You should be. Write to-day for catalog, etc.

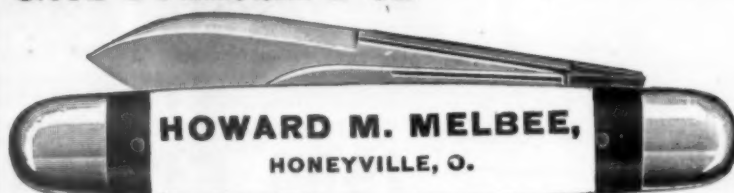
We sell full line of **SUPPLIES**.

The National Supply Co.
ELGIN, ILL.



American Bee Journal Novelty Pocket-Knife Gold Fountain Pen

All
for **\$2.75**



(This cut is the full size of the Knife.)

NOVELTY POCKET-KNIFE

(Name and Address on one side—Three Bees on the other side.)

Your Name on the Knife.—When ordering, be sure to say just what name and address you wish put on the Knife.

The Novelty Knife is indeed a novelty. The novelty lies in the handle. It is made beautifully of indestructible celluloid, which is as transparent as glass. Underneath the celluloid, on one side of the handle is placed the name and residence of the owner, and on the other side pictures of a Queen, Drone, and Worker, as shown here.

The Material entering into this celebrated knife is of the very best quality; the blades are hand-forged out of the very finest English razor-steel, and we warrant every blade. It will last a life-time, with proper usage.

Why Own the Novelty Knife?—In case a good knife is lost, the chances are the owner will never recover it; but if the "Novelty" is lost, having name and address of owner, the finder will return it. If traveling, and you meet with a serious accident, and are so fortunate as to have one of the "Novelties," your POCKET-KNIFE will serve as an identifier; and, in case of death, your relatives will at once be notified of the accident.

How to Get this Valuable Knife.—We send it postpaid for \$1.25, or club the Novelty Knife and the American Bee Journal for one year—both for \$2.00. (Allow two weeks for Knife order to be filled.)

SOLID GOLD FOUNTAIN PEN

Finally we have found a good Fountain Pen that is reasonable in price. The manufacturers of this pen say that if you pay more than \$1.25 for other fountain pens, it's for the name.

This pen is absolutely guaranteed to work perfectly, and give satisfaction. The Gold Nibs are 14 kt., pointed with selected Iridium. The Holders are Para Rubber, handsomely finished. The simple feeder gives a uniform flow of ink. Each pen is packed in a neat box, with directions and Filler.

We mail this **Gold Fountain Pen** for only \$1.25, or for \$2.00 we will mail it and the weekly American Bee Journal for a whole year.

Sample copy of the American Bee Journal free; trial trip of three months (13 copies) for 20c; regular yearly price, \$1.00. Address all orders to

GEORGE W. YORK & CO., 334 Dearborn St., Chicago, Ill.

How to Get the Knife or Pen Free

1. Send us 3 New Subscriptions to the American Bee Journal for a year at \$1.00 each (\$3.00) and we will mail you the above Knife or Pen free as a premium.
2. Send us 2 New Subscriptions to the American Bee Journal for a year at \$1.00 each, and also 40 cents (\$2.40 in all) and we will mail you either the Knife or the Pen.
3. Send us 1 New Subscription to the American Bee Journal for a year at \$1.00, and also 75 cents (\$1.75 in all) and we will send you the Knife or the Pen.



Worker



Queen



Drone

1/2 size

BEE-BOOKS

SENT POSTPAID BY

GEORGE W. YORK & CO.

834 DEARBORN STREET, - CHICAGO, ILL.

Advanced Bee-Culture. Its Methods and Management, by W. Z. Hutchinson.—The author of this work is a practical and helpful writer. You should read his book; 330 pages; bound in cloth, and beautifully illustrated. Price, \$1.20.

A B C of Bee-Culture, by A. I. & E. R. Root.—A cyclopedia of over 500 pages, describing everything pertaining to the care of the honey-bees. Contains about 400 engravings. It was written especially for beginners. Bound in cloth. Price, \$1.20.

Scientific Queen-Rearing, as Practically Applied, by G. M. Doolittle.—A method by which the very best of queen-bees are reared in perfect accord with Nature's way. Bound in cloth and illustrated. Price, \$1.00; in leatherette binding, 75 cents.

Bee-Keeper's Guide, or Manual of the Apiary, by Prof. A. J. Cook, of Pomona College, California. This book is not only instructive and helpful as a guide in bee-keeping, but is interesting and thoroughly practical and scientific. It contains a full delineation of the anatomy and physiology of bees. 544 pages. 295 illustrations. Bound in cloth. 19th thousand. Price, \$1.20.

Langstroth on the Honey-Bee, revised by Dadant.—This classic in bee-culture has been entirely re-written, and is fully illustrated. It treats of everything relating to bees and bee-keeping. No apiarian library is complete without this standard work by Rev. L. L. Langstroth—the Father of American Bee-Culture. It has 520 pages, bound in cloth. Price, \$1.20.

Honey as a Health Food.—This is a 16-page honey-pamphlet intended to help increase the demand for honey. The first part of it contains a short article on "Honey as Food," written by Dr. C. C. Miller. It tells where to keep honey, how to liquefy it, etc. The last part is devoted to "Honey-Cooking Recipes" and "Remedies Using Honey." It should be widely circulated by those selling honey. The more the people are educated on the value and uses of honey the more honey they will buy. Prices: Sample copy for 2-cent stamp; 50 copies for 70 cents; 100 for \$1.25; 250 for \$2.25; 500 for \$4.00; or 1000 for \$7.50. Your business card printed free at the bottom of the front page on all orders for 100 or more copies.

Forty Years Among the Bees, by Dr. C. C. Miller.—This book contains 328 pages, is bound in handsome cloth, with gold letters and design; it is printed on best book-paper, and illustrated with 112 beautiful original half-tone pictures, taken by Dr. Miller himself. It is unique in this regard. The first few pages are devoted to an interesting biographical sketch of Dr. Miller, telling how he happened to get into bee-keeping. About 20 years ago he wrote a small book, called "A Year Among the Bees," but that little work has been out of print for a number of years. While some of the matter used in the former book is found in the new one, it all reads like a good new story of successful bee-keeping by one of the masters, and shows in minutest detail just how Dr. Miller does things with bees. Price, \$1.00.

"The Honey-Money Stories."—A 64-page-and-cover booklet, 5½x8½ inches in size, printed on best quality paper. Many short, bright stories interspersed with facts and interesting items about honey and its use. The manufactured comb honey misrepresentation is contradicted in two items, each occupying a full page, but in different parts of the booklet. It has in all 33 fine illustrations, nearly all of them being of apiaries or apiarian scenes. It also contains 3 bee-songs, namely, "The Hum of the Bees in the Apple-Tree Bloom," "Buckwheat Cakes and Honey," and "The Bee-Keeper's Lullaby." This booklet should be placed in the hands of everybody not familiar with the food-value of honey, for its main object is to interest people in honey as a daily table article. Price, 25 cents, or 3 copies for 50 cents.

CHARLES MONDENG SECTION MACHINE



is covered by two Patents. With this wonderful invention the cost of making Sections may be reduced to \$1.15 per 1000. If such Machine will interest you, write for further information. Do not write about it unless you mean business.

BEE-SUPPLIES AND QUEENS

My Catalog for 1906 is now ready for distribution. I am the Northern Headquarters for **Adel Queens and Bees**, and good, honest Bee-Keepers' Supplies. If you have not received my Catalog, write for it. Address,

CHARLES MONDENG,

160 NEWTON AVE., N., MINNEAPOLIS, MINN.

Mention Bee Journal when writing.

BEE-KEEPERS

Send for our 1906 Free Illustrated Catalog. Good Goods, Low Prices and Prompt Shipments are what you get if you send your orders to—

PAGE & LYON MFG. CO.

New London, Wis.

1900 Washer FREE!

Any worthy person can have a "1900" Gravity Washer free to try four weeks just by writing for it. We pay the freight and take all risk. You don't risk a penny. Test it four weeks at our expense. If you like the Washer, keep it on the "1900" plan, which we will explain to you. If you don't like it return it at our expense, so you are nothing out. Washes a tub full of dirty clothes clean in Six Minutes. Get it FREE by addressing a postal today to "1900" WASHER CO., No. 403 HENRY STREET, BINGHAMTON, N. Y., or 355 Yonge Street, Toronto, Can.



Mention Bee Journal when writing.



50 BULBS

25 Cents.

Will grow in the house or out of doors. Hyacinths, Tulips, Gladiolus, Crocus, Fuchsias, Oxalis, Tuberoses, Begonia, Jonquilla, Daffodils, Chinese Lily, Dewey Lily, Gloriosa, Lilies of the Valley—all postpaid, 25c. in stamps or coin. As a premium with these Bulbs we will send FREE a big collection of flower seeds—over 300 kinds. HILLSIDE NURSERY, SOMERVILLE, MASS.



FOR SALE

50 colonies of Italian BEES in 8-frame L. hives. GUSTAVE GROSS, 14Alt LAKE MILLS, WIS.

Mention Bee Journal when writing.

BEE-SUPPLIES

We manufacture everything needed in the Apiary, and carry a large stock and greatest variety. We assure you the best goods at

LOWEST PRICES

and our excellent freight facilities enable us to make prompt shipments over 15 different roads, thereby saving you excessive freight charges as well as time and worry in having goods transferred and damaged. We make the

Alternating, Massie, Langstroth and the Dovetail Hives

Our prices are very reasonable, and to convince you of such we will mail you our free illustrated and descriptive catalog and price-list upon request. We want every bee-keeper to have our Catalog. **SPECIAL DISCOUNTS** now. Write to-day.

KRETCHMER MFG. CO., Council Bluffs, Iowa.

Muscatine Produce Co., Muscatine, Iowa.
Trester Supply Co., 103 S. 11th Street, Lincoln, Neb.
Shugart-Ouran Seed Co., Council Bluffs, Iowa.
T. B. Vallette & Son, Salina, Kan.

Catalogs issued in English or German.

Mention Bee Journal when writing.

Excellent Goods
Lowest Prices

Bee - Supplies

OF ALL KINDS

ESTABLISHED 25 YEARS

We have published THE AMERICAN BEE-KEEPER for 16 years (monthly, 50c a year.) The largest and best illustrated magazine of its kind for the price published. Edited by two of the most experienced bee-keepers in America.

Sample copy free.

Our large, illustrated Price-List of Supplies free on application. Address,

The W. T. Falconer Mfg. Co.

JAMESTOWN, N. Y.

Mention Bee Journal when writing.

Honey and Beeswax

CHICAGO, March 7.—Choice white comb honey is not plentiful, and it sells upon arrival at 15c per pound. Other grades of comb are not in demand and sell at uncertain prices of 10@14c per pound. Choice white extracted, 6¼@7¼c; amber grades, 5¼@6¼c. Beeswax, 30c per pound. R. A. BURNETT & Co.

TOLEDO, Feb. 19.—The market for comb honey has been better for the past two weeks than at any time during the past season. Prices are firm on account of the scarcity. We are getting 15@16c for fancy white clover; 14@15c for No. 1, and 13@14c for amber. Buckwheat, 13c. Extracted honey is in good demand at following prices: White clover in barrels brings 6¼@7c; amber, 5¼@5½c; in cans every grade from 1@1¼c higher. Beeswax is firm and in good demand at 28 and 30c.

The above are our selling prices, not what we pay. GRIGGS BROS.

INDIANAPOLIS, March 24.—Fancy white clover comb brings 16c; No. 1, 14c; demand exceeds the supply; fancy white western comb brings 14@15c; amber grades in poor demand at 12c. Best grade of extracted honey brings 8¼@9c in 60-pound cans; amber, 6c. Good average beeswax sells here for \$33 per 100 pounds. WALTER S. POWDER.

PHILADELPHIA, March 20.—The call for honey is falling off, and while the supply is not abundant, yet it equals the demand. We quote fancy white, 16@17c; amber, 13@14c. Extracted, white clover, 7@8c; amber, 6@7c. Beeswax, 28c.

We are producers of honey and do not handle on commission. WM. A. SEISER.

NEW YORK, March 19.—Demand for comb honey is fair, especially for the better grades, and fancy white is selling at from 14@15c; No. 1, 13c; light amber, 11@12c; no more demand for dark comb honey. Extracted is in good demand, mostly California, at unchanged prices. Beeswax is firm at from 29@31c, according to quality. HILDRETH & SEGELKEN.

Headquarters for Bee-Supplies

Complete Stock for 1906 now on hand.

FREIGHT-RATES FROM CINCINNATI

are the LOWEST, ESPECIALLY for the SOUTH

as 'most all freight now goes through Cincinnati.

You will Prompt Service is what I practice. Satisfaction Guaranteed.

SAVE MONEY BUYING FROM ME. Catalog mailed free. Send for same.

Let me book your Order for **QUEENS** bred in separate apiaries, the **GOLDEN YELLOWS, CARNIOLANS, RED CLOVERS** and **CAUCASIANS**.

For prices, refer to my catalog, page 29.

C. H. W. WEBER CINCINNATI OHIO

Office and Salesrooms, 2146-48 Central Ave. Warehouses, Freeman and Central Aves.

CINCINNATI, March 8.—The demand for comb honey has brightened considerably since we last reported; in all probability, by the close of April, the market will be bare of comb honey. This will be encouraging to the bee-keeper. Nevertheless, to advance the price is out of the question; therefore, we continue to quote fancy white comb honey at 14@15c. The demand for extracted honey does not come up to our expectations; we quote amber at from 5¼@6¼c, according to the quality; fancy white, in 60-lb. cans, 8c. Choice bright, yellow beeswax, 30c. THE FRED W. MUTH CO.

DENVER, Feb. 5.—Owing to the mild weather the demand for honey has not been as good as usual at this time of year. We are quoting strictly No. 1 white alfalfa comb honey at \$3.35 to \$3.75 per case of 24 sections; off grade and light amber at \$3 to \$3.30. White extracted alfalfa in 60-pound cans, 7¼@8¼c; light amber, 6¼@7¼c. Beeswax, 24c for clean yellow. THE COLO. HONEY-PRODUCERS' ASSN.

KANSAS CITY, March 16.—The supply of comb honey is not very large. Demand is light, best 24 section white selling at 3.25 per case, amber at 25@50c per case less. Extracted, white, 6¼c per pound; amber, 6c. Beeswax, 25@30c. We look for an increased demand in the near future. C. C. CLEMONS & Co.

CINCINNATI, March 7.—The demand for comb honey is slow, prices obtained are the same. Stock on hand seems to be sufficient to supply the wants. Quote fancy white, 14@16c. Amber extracted in barrels, 5¼@5½c; in cans, ¼c more; fancy white clover in 60-lb. cans, 7¼@8¼c; Southern, equal to white clover in color, from 6¼@7c. Bright yellow beeswax, 30c. C. H. W. WEBER.

Please Mention Bee Journal when writing advertisers.

HONEY AND BEESWAX

When consigning, buying or selling, consult

R. A. BURNETT & CO.

199 SOUTH WATER ST. CHICAGO, ILL.

Mention Bee Journal when writing.

ONE TON White Clover Honey

Candied—a 60-pound can, \$6. Cash and instructions sent to Farmers' Bank.

JOHN C. STEWART

8Atf HOPKINS, MO.

Mention Bee Journal when writing.

FOR SALE

Until further notice, finest quality new crop California Water-White White Sage and Light Amber HONEY in 60-lb. tins, 2 in a case; new cans and new cases. Write for prices and samples, and state quantity you want.

HILDRETH & SEGELKEN

265 & 267 Greenwich Street, NEW YORK, N. Y. 34Atf Please mention the Bee Journal.

Cash for Beeswax

Highest market price paid promptly all the time for good wax.

Frank G. Glark, 147 E. Kinzie St. Chicago, Ill.

Mention Bee Journal when writing.

FANCY WHITE EXTRACTED HONEY

CRATES 2-60 LB. CANS; 8c

TWO OR MORE CRATES; 7¼

LARGER LOTS, WRITE FOR SPECIAL PRICES. ALL F. O. B. CINCINNATI. CASH WITH ORDER. SAMPLES 10c. TO PAY POSTAGE.

THE FRED W. MUTH CO.

No. 51 WALNUT STREET, CINCINNATI, OHIO. SEND FOR CATALOG OF BEE SUPPLIES WITH SPECIAL DISCOUNT.

Boss Sections from the Section Bosses

We Have Section Bosses—

Not the kind you find on the Railroad; but genuine, capable honey-section overseers. They are mechanics who have spent a score of years just learning how to make the best Sections—**Lewis Sections**.

Years of Study and Constant Vigilance

Over the delicate, intricate machinery means that every crate of **Lewis Sections** is perfect. Each day and each hour these section specialists personally inspect our machines and examine the output. This keeps **Lewis Sections** uniformly perfect.

Ah, That's the Secret!

Now you have it. That's the reason

Lewis Sections are the Same the World Over

What the Bee-Keepers Say:

G. B. LEWIS CO., Watertown, Wis. Paullina, Iowa.
Gentlemen:—Received my sections in fine shape and am well pleased with them. They are the best sections I have ever put together.
 Yours truly,
 ARTHUR STRAMPE.

G. B. LEWIS CO., Watertown, Wis. Smithville, Ga.
Gentlemen:—I am anxious to use your sections, for I consider them the best sections made, at any rate they are good enough for me.
 Yours truly,
 R. P. JOHNSON.

G. B. LEWIS CO., Watertown, Wis. Rome, Pa.
Gentlemen:—I think the sections the best I ever saw.
 Yours truly,
 W. J. HILL.

G. B. LEWIS CO., Watertown, Wis. Oakland, Mo.
Gentlemen:—Your hives fit perfectly and your sections are simply superb.
 ROBT. WILSON.

G. B. LEWIS CO., Watertown, Wis. Deerfield, Iowa.
Gentlemen:—I want to say that I consider your make of sections the nearest perfect of any I have ever had. I have

folded packages of 500 without breaking one, and I cannot say that of others I have used.
 Yours truly,
 GEORGE BROWN.

G. B. LEWIS CO., Watertown, Wis. Grand View, Iowa.
Gentlemen:—I have received those sections in good shape and I am well pleased with same. They are all right in every way. I shall recommend your bee-supplies to other bee-keepers. I think you make better goods than any other firm in the world. Accept my thanks.
 Yours truly,
 GEO. B. MCDANIELS.

G. B. LEWIS CO., Watertown, Wis. Kenton, Ohio.
Gentlemen:—The goods are simply fine in every respect. We have compared a few of the No. 1 sections bought of another firm which we carried over from last season, with your No. 2, and find that the No. 2 are superior.
 Yours truly,
 NORRIS & ANSPACH.

G. B. LEWIS CO., Watertown, Wis. Centralia, Kan.
Gentlemen:—Everybody wants Lewis sections.
 Yours truly,
 A. W. SWAN.

G. B. LEWIS CO., Watertown, Wis.

**AGENTS
EVERYWHERE**